



offers a range of enhanced capabilities, from higher flight altitude (up to 30,000 ft.) to longer endurance and larger payload capacity. The system's unique structure enables it to carry a variety of payloads in different shapes and sizes for quick "conversion" between payload configurations.

Elad Aharonson, General Manager, Elbit Systems UAS Division, said, "We are very proud that yet another customer has selected the Hermes® 900, following orders by the Israeli Defense Forces and Chile. Hermes® 900 is establishing its position as a world-leading UAS for intelligence missions, as well as perimeter and security missions."

## Moving Results For Customers

**Last year, SES announced the integration of their two satellite operating companies and the creation of a truly unified global fleet.**

With this integration, their U.S. Government business was realigned to better leverage SES' fleet of 50 satellites to serve the unique needs of their customer base.

Tip Osterthaler, President and CEO of SES Government Solutions noted, "This integration and the new alignment of SES Government Solutions within the company, has enabled us to react faster to the changing needs of our customers worldwide—including our government customers."

In February of this year, global commercial satellite operator SES announced the relocation of the SES-3 satellite from its former location over North America to Asia, an area of increasing great demand for state-of-the-art, reliable satellite capacity.

The SES-3 satellite was relocated to 108.2° East to provide coverage of the Middle East and South Asia regions, where SES is experiencing growing customer demand. The drift began in mid-December 2011 and the satellite arrived at its new orbital location on February 6, 2012.

"The relocation of the SES-3 satellite is a result of continued engagement and dialogue with our customers and in response to the growing demand for bandwidth to support critical communications capabilities. This move is a confirmation of our commitment to provide affordable and vital capability for our government customer," Osterthaler said.

SES-3 is a young satellite as it was just launched in July of 2011. Once reaching 108.2° East, the planned coverage is capable of supporting such applications as video, voice, data, and end-to-end

communications networks.

With MAC-1 compliance and encrypted tracking, telemetry and control, the satellite is also well positioned to meet the secure communications needs of government customers.

In a recent press release, Romain Bausch, President and CEO of SES, stated: "With a fleet of 50 spacecraft in orbit around the globe, SES has the operational flexibility to swiftly respond to shifting customer demand by re-deploying in-orbit capacity without affecting existing services."

## Hastening HX

**Hughes Network Systems, LLC has announced the planned release of its HX System 4.0, bringing a host of technology enhancements to the HX product family which will enable higher performance, higher efficiency, and a number of significant new features.**



*Hughes HX2x0 satellite terminal*

Summarized next, these enhancements further strengthen the HX System in specialty markets such as IP trunking, 3G/4G cellular backhaul, Virtual Network Operator (VNO) hosting, and Comms On-The-Move (COTM) for airborne/maritime/land, including defense and Intelligence, Surveillance, and Reconnaissance (ISR) solutions.

**IPv6/IPv4 Support:** A major element of HX System 4.0 is a dual stack IPv6/IPv4 design which will enable the simultaneous support of both protocols. The ability to implement IPv6 is fast becoming a critical issue for every telecommunications service provider as the availability of new IPv4 address space is quickly disappearing. HX System 4.0 will enable operators to smoothly transition to IPv6 while continuing to support their installed base of IPv4 customers and devices.

**HX90 Satellite Broadband Router:** The new HX 90 features higher efficiency and lower operational costs on satellite links through a new optimized encapsulation scheme on the outroute, and through LDPC coding on the inroute, the same coding scheme as used in the DVB-S2 standard. Combined with a major performance boost across the entire HX System



*The SES-3 satellite undergoing final checks, photo courtesy of Orbital Sciences Corporation.*



### FCSA—A Year In Review

by Tip Osterthaler, President + CEO, SES Government Solutions



**I**n February 2012, the commercial satellite industry and the U.S. Government marked the one year anniversary of the first award under the Future Commercial SATCOM Services Acquisition, or FCSA. The initial intent of the joint GSA-DISA vehicle was to create a common marketplace for government customers to increase competition, opportunities and technologies, and ultimately, provide competitive pricing to the government. As industry awaits the third tier of the FCSA suite, the custom satellite solutions or CS2 contract, *MilsatMagazine* spoke with SES Government Solutions President and CEO, Tip Osterthaler, to obtain his feedback on the Transponded Capacity and Subscription Services contracts released during this first year of FCSA.



### **MilSat Magazine (MSM)**

*Tip, from the perspective of a commercial satellite operator, how was the new FCSA model different from the previous way of doing business? What was this recent change intended to do?*

#### **Tip Osterthaler**

For the past decade, the Department of Defense procured a large portion of their satellite communications capability through a procurement vehicle known as DSTS-G, which stands for the DISN Satellite Transmission Services—Global. When initially awarded to three small businesses in 2001, DSTS-G was the single largest small business set aside procurement of its kind in DoD history. In 2011, the FCSA vehicle opened the competitive landscape to include commercial satellite operators, integrators, equipment manufacturers, and service providers. This broadening of the participants in the GSA schedule enabled direct dialogue between the commercial satellite operators and the government end-users, and was intended to foster competition, increase options for the government, and reduce costs.

#### **MSM**

*SES Government Solutions was one of the first satellite operators to receive the new FCSA vehicle under Schedule 70 in early 2011. How would you say SES-GS was positioned when the first opportunities came out for competition considering your foreign ownership?*

#### **Tip Osterthaler**

We've been doing business with the U.S. Government for over 35 years, since signing our first contract with the Air Force in 1975 as RCA Americom, and even during the DSTS-G era, we provided satellite services and solutions directly to the government under a number of different contract vehicles.

As a U.S. proxy corporation and wholly owned subsidiary of the Luxembourg-based SES, we operate as an American company, so foreign ownership is not really an issue, particularly in light of the fact that there are no large American fixed satellite service companies. Having said all that, the DSTS-G contract limited our direct interaction with the Government and specifically some of the most important end-users of our services, so we are still in the process of rebuilding those relationships.

#### **MSM**

*Following the first year of FCSA, do you believe the government is in a better position to receive the competitive pricing and common marketplace they initially were seeking? Do you support this new way of doing business with the government going forward?*

#### **Tip Osterthaler**

At SES-GS, we continue to strongly support the Government's move toward a more open and inclusive procurement environment for commercial space products and we also strongly support the initial intent of the FCSA program. However, for more than 10 years, commercial satellite capacity was channeled through three small companies, and the traditions and relationships that developed over those years are deeply entrenched. I would have to say that, so far, FCSA has not lived up to its promise.

To truly take advantage of the competitive landscape now available to the government, it will take more than a new contracting vehicle. I regularly meet with DISA and other government officials, and I believe they are committed to making FCSA a success. However, as long as end-users are permitted to write requirements that can be met by only the incumbent solution or a single service provider, the benefits of competition promised by FCSA will not be realized by the government.

#### **MSM**

*Are you suggesting the first year of FCSA was essentially, "business as usual" in terms of the previous DSTS-G program? If so, how?*

### **Tip Osterthaler**

We understand that a change this significant will take time to have its complete and intended impact. This is after all the largest SATCOM procurement program to date for the U.S. Government. However, since the first contracts were released in February of 2011, almost all of the awards have been made to the incumbents, either as a recompetes on FCSA or as an extension of existing work on DSTS-G. Continuing in this fashion does not get the government in the position of increased competition and affordable solutions they were initially seeking. Unfortunately, early indications reveal similar results in year two of the procurement process.

#### **MSM**

*Is there substantial risk to continuing to procure capacity in this fashion going forward? If so, what is the risk and what would you recommend the government do?*

#### **Tip Osterthaler**

The U.S. Government and, particularly, troops deployed in the CENTCOM AOR will be dependent upon commercial satellite capacity for the foreseeable future, and this reality makes it very important that commercial owner-operators like SES remain engaged and focused on the needs of this customer.

I believe that DISA is doing what it can to create a level playing field for companies like ours who are reentering the direct market, but, so far, the expectations they have created over the past three years are simply not being met. We remain hopeful that, over time, the market will indeed be more open to new providers and solutions. However, every day that passes without real competition increases the risk that FCSA will not deliver more choices or lower costs, but instead cause companies such as ours to have to take a "wait and see" attitude rather than relying on what the government says it intends to do. This would be a very bad outcome for both the government and our company, because we simply do not have enough money in the DoD budget to buy the space capabilities we need if we continue to do business the way we have done it in the past.

#### **About the author**

Mr. Robert Tipton (Tip) Osterthaler joined SES in 2006 to become the President and CEO of AMERICOM Government Services. Since then, the wholly-owned subsidiary of SES SA has become SES Government Solutions (SES-GS). During his tenure at SES, the U.S. Government business has been transformed from a product-oriented sales channel into a solutions-focused independent subsidiary responsible for all aspects of SES's U.S. Government business, including planning for the next generation of satellites that will be needed by government users. Under his leadership, SES Government Solutions transitioned into a Proxy Corporation structure, allowing the company to broaden its business base to include a wider range of customers and technologies. In 2008, SES-GS entered into a groundbreaking contract with the U.S. Air Force to fly the Commercially Hosted Infra Red Payload (CHIRP), and in 2009, SES-GS conducted its first acquisition, enabling the company to better serve the intelligence community.

From 1997 until 2006, Tip was a Senior Vice President at Science Applications International Corporation (SAIC). His last assignment was Deputy General Manager of the Strategies, Simulation and Training Business Unit, a 2,300 person organization that provides government and commercial clients with advanced modeling, simulation and training solutions. Prior to joining SAIC, Tip served in the U.S. Air Force for 28 years, retiring as a Brigadier General and Deputy Assistant Secretary of Defense for European and NATO Policy. Earlier positions include Vice Commander of the Air Intelligence Agency and numerous command and senior staff assignments. Mr. Osterthaler is a Command Pilot with more than 3,200 hours of flying time in fighter aircraft including multiple models of the F-15 Eagle.

## SERVICE NEEDS COVERED

**Encompass Government Solutions, a division of Encompass Digital Media, has been awarded a contract to become Inmarsat's satellite access station (SAS) in support of the new Global Xpress® constellation.**

As one of two North American co-primary Teleports, Encompass will provide uplink/downlink services, collocation of Inmarsat equipment and interconnectivity to Inmarsat's terrestrial data networks. This next-generation, Ka-band satellite fleet offers high throughput with downlink speeds of up to 50Mbps and up to 5Mbps over the uplink from compact user terminals.

The Global Xpress launch program commences in 2013 and a third launch is scheduled for 2014. Inmarsat required a secure site that provided an optimum environment with minimal disruption risks, such as extreme weather conditions; and Encompass' Lino Lakes, Minnesota, facility renders a unique geographical location for radio frequency communication. Encompass will be supporting Inmarsat by collocating and managing a significant array of satellite ground segment equipment and routine maintenance services for a new 13.2m Ka-band antenna.

Encompass services will include a newly constructed 2,500 square foot cement building which will house equipment to manage, control and provide service to Inmarsat Global Xpress customers.

During the long-term contract, Encompass will provide SAS services pre-launch and throughout the life of the Global Xpress fleet in addition to 24/7/365 "hot hands" engineering and facilities support at the antenna hub.

#

## CS2 APPROVAL

**SES Government Solutions (SES-GS) has been awarded a Custom SATCOM Solutions (CS2) contract.**

The contract has been awarded to eight companies and has a total funding ceiling of USD 2.6 billion over a base period of three years with two additional one-year options. With this award, the U.S. Government will be able to contract directly with the global satellite operator to obtain mission-tailored communications capability and solutions on SES' fleet of 51 communication satellites. #



# THE HPA CORNER: FACILITATING FOREIGN LAUNCH EXEMPTIONS

By David Anhalt, V.P., U.S. Government Solutions, Space Systems/Loral



**T**here has been a lot of discussion over the past year about how the commercial space industry can be leveraged by the U.S. Government to achieve its goals of resilience, affordability, risk reduction and increased flexibility, capability, and capacity for national security, space exploration, and science missions.

One of the impediments to a clear road ahead for this strategy is the commercial satellite industry's reliance on affordable, reliable launch services by overseas providers. For the dozen years since 2000, more than 220 commercial GEO satellites were manufactured worldwide and, even though two thirds of them were manufactured in the U.S., less than 10 percent of them were launched in the U.S.

The **2004 U.S. Space Transportation Policy** states that U.S. Government payloads shall be launched on U.S. vehicles unless exempted by officials in the White House after a thorough interagency vetting.

If the timing of this exemption review is delayed until all the facts about the nationality of the launch vehicle are known, then the "legitimacy" of commercial hosting will be threatened. Some simple changes to the U.S. Space Transportation Policy would help improve the business case for hosted payloads.

## **Recommended Alterations**

The Hosted Payload Alliance (HPA) recently recommended three changes to the Space Transportation Policy:

- **The exemption process needs to be transparent and time limited.**
- **Exemptions with conditions should be allowed even before the ultimate launch service provider is known.**
- **U.S. departments and agencies should have the option of seeking an exemption for foreign launch as early in their planning process as possible, ideally before formal analyses of alternatives are performed.**

## **Subject-Matter Expertise**

We asked members of the **Hosted Payload Alliance** the following question:

*When in the satellite procurement process do you think exemptions should be considered and what kinds of conditions would make exemptions more workable?*

*James Mitchell, Vice President, Boeing Commercial Satellite Services:*

*"The recent successes at SpaceX are encouraging for the United States launch industry, however, from a combined cost and access-to-space perspective, for the foreseeable future, commercial satellite operators will need to*

*launch a significant percentage of their future satellites on French and Russian launch vehicles. Therefore, to the extent government payloads will seek commercial rides, there must be a corresponding flexibility in launch vehicle choices. Absent this flexibility, commercial operators will see little or negative benefit to hosting government payloads and will turn their attention elsewhere."*

*Don Thoma, Executive Vice President, Iridium and President of Aireon LLC:*

*"It is important that the exemption process in the Space Transportation Policy allows U.S. Government missions to assess foreign launch opportunities as early in the procurement process as possible. Launch costs represent a significant investment for companies and can often impede access to space.*

*The HPA evaluated the current policy and the aforementioned recommendations will ensure that mission security requirements are met while making the exemption process transparent and time limited; allowing for conditional exemptions until the launch service provider is known; and providing U.S. departments and agencies the option to seek an exemption for foreign launch earlier in their planning process."*

*Robert Cleave, President of Commercial Launch Services, Lockheed Martin:*

*"Exemptions should be considered whenever a viable alternative that is cost effective and does not infringe U.S. National Security Interests. Any loss of focus on the government's responsibility to its citizens to protect and serve the National Interest would result in disapproval, regardless the business case."*

*Rich Pang, Senior Director of Hosted Payloads, SES Government Solutions:*

*"Government agencies are given the most flexibility and potential for cost savings and access to space when they are allowed to consider the use of and/or receive an exemption for foreign launchers as early in the planning process as possible. This in turn will allow the government and the contractor to have open and meaningful conversations as*



**The SES-5 satellite, also known as Sirius 5, includes an L-band hosted payload for the EU... the payload is part of EGNOS, which is being developed by the ESA and the EC. The successful launch occurred on July 10, 2012, via an ILS Proton-M launch vehicle.**

*they determine the contractual and operational relationships. Reducing unknowns, reduces risks."*

**David Anhalt, Vice President, U.S. Government Solutions, Space Systems/Loral:**

*"Fundamentally, we need to know if the U.S. Government will permit a foreign launch for a particular government payload when we are evaluating the business case for a new satellite. With nearly 90 percent of GEO commercial satellites launching on French or Russian rockets, the HPA's recommended changes to the exemption policy will reduce the business risk to satellite operators.*

*"Our commercial customers require us to bid spacecraft designed for the environmental requirements of a range of launch vehicles. That's why I favor an exemption process that provides at least a conditional OK for launch on certain foreign rockets dependent on an early assessment of the national security interests involved. Conditional exemptions will allow for programs to move forward when the launcher is still unknown."*

**Thanks to the following individuals for their valuable insight and feedback...**

- Russ Gottfried and Cliff Perkins, Lockheed Martin
- Don Thoma, Iridium
- Rich Pang, Tim Deaver and Kent Verner, SES
- Jim Mitchell, Boeing
- David Anhalt, SS/Loral



## **The Hosted Payload Alliance Charter**

### **Justification**

*The Hosted Payload Alliance (HPA) is a satellite industry alliance formed to increase awareness of the benefits of hosted government payloads on commercial satellites. The U.S. National Space Policy published in 2010 calls for an increasing role for commercial space to meet government requirements. It also explicitly directs the use of non-traditional options for the acquisition of space goods and services, and cites hosted payloads as one of these non-traditional options. The policy notes that public-private partnerships with the commercial space industry can offer timely, cost-effective options to fill government requirements.*

### **Goals**

*Serve as a bridge between government and private industry to foster open communication between potential users and providers of hosted payload capabilities.*

*Build awareness of the benefits to be realized from hosted payloads on commercial satellites.*

*Provide a forum for discussions, ranging from policy to specific missions, related to acquisition and operation of hosted payloads.*

*Act as a source of subject-matter expertise to educate stakeholders in industry and government.*

### **Membership Criteria**

*Membership in HPA is open to satellite operators, satellite manufacturers, system integrators and other interested parties.*

**More information is available at the organization's website via this link.**



# ESSENTIAL NATIONAL COMMUNICATIONS INFRASTRUCTURE NEEDED

By Brig. Gen. Tip Osterthaler, USAF (Ret), President & CEO, SES Government Solutions



**I**n 2012, the DoD will spend approximately \$1 billion buying capacity on commercial communication satellites. That capacity will fulfill about 80 percent of the total satellite communication needs of the Department, the remainder being filled by government-owned satellites. This arrangement between the government and industry has evolved over time as the capacity needed to support a variety of bandwidth-hungry applications has exploded, and the capacity of government-owned systems has lagged. With the deployment of the government's *Wideband Global SATCOM* constellation, the Defense Department will take a bite out of commercial demand, but the continual fielding of ever more demanding sensors and applications is likely to result in the need for a huge amount of commercial capacity for as far as one can see into the future.

Today, the DoD buys an increasing amount of commercial capacity directly from satellite owner-operators and the balance from resellers. About half of the total bandwidth is bought for end-users by the Defense Information Systems Agency (DISA), and most of the remainder is purchased on a variety of single-award or multiple-award "indefinite delivery indefinite quantity" (IDIQ) contracts.

The benefit of these IDIQ contracts is to streamline the buying process by preselecting one or more vendors who can then bid on task orders as they arise during the period of performance. Over the past two years, the Department has doubled down on this buying strategy by creating a very large, three-part IDIQ vehicle called the Future Commercial Satellite Communications (COMSATCOM) Services Acquisition or FCSA contract.

Under the co-management of DISA and the General Services Administration (GSA) the vehicle is designed to create more competition and reduce prices while also remaining responsive to user needs. While there is not yet enough data to determine the extent to which government objectives will be met with FCSA, it's likely that cost savings will be achieved simply due to the fact that the government now buys bandwidth from the source rather than always having to go through resellers, a practice that was dictated by the old contract which FCSA replaced. Unfortunately for those who will continue to rely on commercial capacity for the foreseeable future, the story does not end here.

In order to see why, it's necessary to understand a little bit about the companies that provide commercial bandwidth—here are some facts:

—First, there are only a few firms that do this sort of thing—the so-called owner-operators. In fact, there are only two global satellite companies followed by two significant regional players, and together they provide the majority of the total capacity on orbit on their combined fleets of almost 150 satellites.

—Second, these companies are predominantly providers of capacity for commercial customers such as the big media companies, large network operators, and direct-to-home television consumers. In fact, the U.S. Government, while an important customer of all four companies, probably consumes only about 15 percent of their total combined capacity.

—Third, owning and operating satellites is a capital-intensive business, with the cost of a single satellite on orbit (including the

launch and the insurance) coming in at around \$300 million. These facts create an important dynamic in the relationship between the DoD and the industry: the government is heavily reliant on the owner-operators to support their communication needs, but the owner-operators are less dependent on the government, having to pay even closer attention to their commercial customers who represent most of their business. Now consider a few more facts about the industry.

Commercial satellites generally operate for about 15 years once they reach orbit, and the primary metric for measuring their business success is return on investment. Said another way, the commercial owner-operators are in a capital intensive, long-cycle business—what they themselves call an "infrastructure" business. They plan decades ahead and spend billions of dollars on fixed assets. Financially, satellite owner-operators have more in common with railroads or commercial airlines than they do with typical government service providers—the kinds of companies that typically do business with the government through IDIQ contracts. Why is this a problem?

## **Challenging Situations**

Under an IDIQ contract, the government first creates a framework for doing business with one or more vendors by establishing a period of performance, a general description of the work to be done, a contract ceiling and contract terms and conditions. Once they have done that and signed one or more of these umbrella contracts, they define specific requirements in the form of a task orders.

When buying commercial satellite capacity, the government almost always contracts for one year while reserving the right to unilaterally extend a year at a time for some number of option years, typically three to five. That arrangement would seem to be fine in that it usually results in quick turnarounds of task orders, and there are sometimes cost benefits as well, particularly when more than one satellite can meet the requirements.

However, when one looks a little deeper into this process, there is an obvious problem: There is no incentive for commercial owner-operators to invest in the capacity **the government needs for the future. In other words, while IDIQ contracts such as FCSA appear to be providing some short-term benefits to the government, they are in fact also contributing to an**

escalating risk that future needs will not be met. In short, DoD is buying satellite capacity as if it were an easily scalable technical service, when what the Department is really buying is access to essential communications infrastructure. While we have not yet, as a nation, had to face the consequences of this practice, that time will come.

For the past decade, U.S. and Allied operating forces in Iraq and Afghanistan have consumed just about all the suitable commercial bandwidth available in the U.S. Central Command Area of Operations. Although it has been expensive and there is little available expansion capability in the region, most needs have been met by industry.

Fortunately for the government, during this time of great demand, the three largest owner-operators had many assets available with coverage of the Middle East, and to a somewhat lesser extent, Southwest Asia. However, earlier this year, the U.S. unveiled an updated national security strategy that envisions a more challenging Asia-Pacific security environment. The presence of the major operators in that part of the orbital arc is dramatically different than in the Middle East.

Although there are emerging commercial markets across Asia, access to spectrum for other than local operators is extremely limited; fill rates on existing satellites are very high; and regulatory barriers to entry are substantial across the entire region. In other words, it would be risky to assume that a crisis response in the Asia-Pacific could be supported by existing available commercial satellite capacity. While it's possible to relocate commercial satellites to new locations, in the Asia-Pacific region, most of the space real estate is in the hands of local governments and companies. Orbital locations may or may not be available for use by commercial companies that support the DoD, and it will take years to address that issue.

### **Meeting Critical Needs**

This takes us back to the key question of how both the short-term and long-term satellite communication needs of the DoD can best be met, and at an acceptable level of cost and risk. While IDIQ contracts certainly have a place in the overall acquisition architecture, we also need to understand their limitations: they will only work when there are alternative solutions on multiple satellites and more capacity than demand. Given the heavy reliance of our operating forces on commercial capacity to carry out their missions, are we willing to bet the farm on IDIQ contracts, gambling that there will always be excess capacity in the right place and suitable for the task?

Commercial owner-operators have been arguing for years that they need better visibility into the U.S. Government's future needs as well as long-term commitments from them in order to justify investments on their behalf. It has been a somewhat sterile conversation because (1) the government has insisted that they cannot make commitments so far in advance, and (2) the companies have in fact made substantial investments even in the absence of such commitments.

Unfortunately, industry has not seen the promised results for the tens of millions of dollars they have spent on things such as DoD-specific security features they have been encouraged to build into their spacecraft, and that makes it increasingly unlikely

they will invest in USG-specific capabilities in the future. As to the Government's reluctance to collaborate with industry and make longer-term commitments, the time has come to be creative.

Large commercial customers who know they depend upon satellite capacity to deliver their products to market and support their essential operations routinely open their books and collaboratively plan with their infrastructure providers—and both sides benefit from this process.

The resulting arrangements often include things like long-term leases for a portion of a satellite payload, providing for assured access and the lowest possible prices. In some cases, commercial customers might even lease an entire satellite on a turn-key basis for most of the life of the asset. Even more important, these engagements lead to a better understanding of the customers' long-term needs and help owner-operators justify the effort and expense associated with the development of both orbital locations and spacecraft.

### **Truly Essential**

Commercial satellite capacity is an essential part of the national communications infrastructure and it is unnecessarily expensive as well as risky for the DoD to continue the current buying practices. While most in industry will happily continue to sell excess bandwidth at premium prices to the government, they are also willing to engage in mutually beneficial negotiations aimed to ensure their infrastructure investments take into account future likely USG needs. FCSA is better for the Government than what preceded it, but it is not the entire answer.

There have been some preliminary efforts by the DoD to come to grips with this dilemma, such as the Assured SATCOM Services in a Single Theater (ASSIST) initiative by DISA last year. While the idea did not survive the budgeting process the first time around, and while it did not adequately engage industry or Congress in its earliest stages, it represented an important expansion in the way the Government thinks about commercial satellite capacity.

As we face continuing budget pressures, and as we become ever more reliant on space-based communications, the time is right to completely rethink how the government and this unique industry segment conduct business.

Forward-thinking individuals in the Department of Defense are doing just that, and their efforts need to be encouraged and supported by the satellite industry, the end-users of commercial capacity, and the Congress.

### **About the author**

Mr. Robert Tipton (Tip) Osterthaler joined SES in 2006 when he became the President and CEO of AMERICOM Government Services. Since then, the wholly-owned subsidiary of SES SA has grown and integrated with other government focused elements within SES to become SES Government Solutions (SES-GS). During his tenure at SES, the U.S. Government business has been transformed from a product oriented sales channel into a solutions-focused independent subsidiary responsible for all aspects of SES's US Government business, including planning for the next generation of satellites that will be needed by government users.



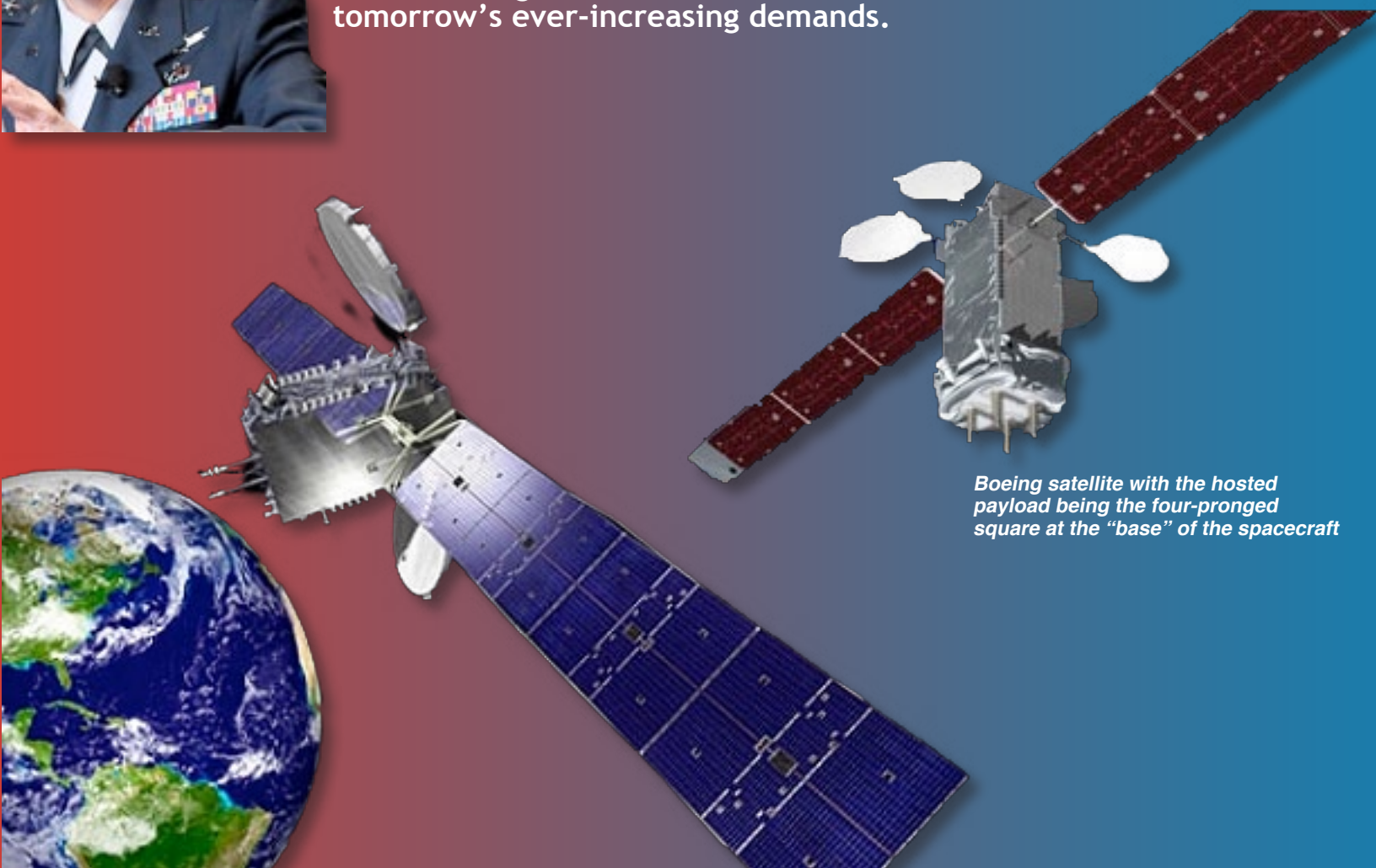
## HOSTED PAYLOADS: ON THE LEADING EDGE

Abstract by Rich Pang, Senior Director For Hosted Payloads, SES Government Solutions

**A**t the leading edge for driving Hosted Payloads is the United States Air Force's Space & Missile Systems Center (SMC), located at Los Angeles Air Force Base in Southern California. At the forefront of innovative ideas to help overcome the many challenges that face our nation and its national security programs today, and well into the future, is *Lieutenant General Ellen Pawlikowski*.



She is breaking paradigms, spearheading new thinking, and creating new options for delivering capability to warfighters in support of national defense. The U.S. Air Force (U.S.A.F.) is to be applauded for their forward-leading creation of a *Hosted Payload Office (HPO)*, under her command. The soon-to-be-released *Hosted Payload Solutions*, indefinite delivery/indefinite quantity (ID/IQ) contract is a clear sign that hosting government payloads on commercial satellites is a viable option when designing and delivering the future architectures that will be needed to meet tomorrow's ever-increasing demands.



Boeing satellite with the hosted payload being the four-pronged square at the "base" of the spacecraft

SES-2 satellite, CHIRP host



*CHIRP hosted payload before it was placed on SES-2. Photo courtesy of SES.*

Hosted payloads will complement and supplement dedicated platforms while providing significant cost savings and improved resilience across most mission architectures. With the recent success of the **Commercially Hosted InfraRed Payload (CHIRP)** program, the hosted payload concept has also proven its ability to help mature and space-qualify new and innovative technologies.

Although the funding is fairly modest at this time, the U.S.A.F.'s *Space Modernization Initiative* will not only allow existing systems to be modernized and upgraded, but enable the use of hosted payloads to deliver these state-of-the-art capabilities in a more timely and cost effective manner.

The **Space and Missile Systems Center** is forging the path to ensure the nation has as many options available as possible as we enter a new austere budgetary environment. Requirements and demand for capability will continue to increase with shrinking budgets, so they must use technology and innovation to drive down cost while sustaining and improving capability.

## Question:

*What can we, as an industry, do to help the Space and Missile Systems Center advance the use of commercially hosted government payloads?*

## Don Thoma, President and CEO, Aireon:

"The SMC has taken the initiative to become a leader in driving the U.S. Government to recognize commercially hosted payloads as a viable alternative for space missions. To

support this advancement, industry can help SMC in several key ways. First, we can provide SMC with subject matter expertise on commercial space practices. Commercial space programs are executed with processes that create substantial efficiencies and are proven to be successful. Industry leaders can help SMC better understand these practices and identify how the government can collaborate with commercial satellite operators to benefit from these efficiencies. Second, we can work with SMC to identify flexible options for executing hosted payloads during all stages of a hosted payload program. Finally, we need to help SMC maintain the momentum they have built by working with SMC to keep an ongoing dialog with leading organizations, like the HPA, ensuring that hosted payloads become an on-going part of SMC's procurement strategy.

## Jim Mitchell, Vice President, Boeing Commercial Satellite Services:

"Partner with Space and Missile Systems to create a joint database that tracks the pipeline of satellite projects and the size, weight and power margin available to accommodate hosted payloads. This would serve as a single database that all government customers could access in determining potential candidates to host government payloads."

## Bill Gattle, Vice President, Aerospace Systems, Government Communications Systems, Harris Corporation

"Hosted payloads provide an extraordinary opportunity to both government and industry to improve access to space. SMC has recognized the value and taken aggressive steps to capitalize on this approach. We congratulate them on their success to date and applaud their continued efforts to realize further benefits. Along with the economic benefits, hosted payloads introduce a unique set of technical, contractual and operational challenges. Our experience indicates technical challenges are typically addressable through proven engineering practices, whereas contractual and operational challenges require creativity and a revisit of industry paradigms. The key to success is open collaboration between all parties. Recognizing the time pressure of commercial launch schedules, both parties must be forthright in disclosing areas of flexibility and areas critical to mission success, such as integration schedules, information



## HOSTED PAYLOADS: ON THE LEADING EDGE (CONT.)

assurance, satellite resources, funding, etc. Business models can be shaped collaboratively by government and industry to balance economic benefit with mission utility.”

### **Robert Burke, Vice President, Strategy and Business Development, Northrop Grumman Aerospace Systems**

“At Northrop Grumman, we are strong supporters of SMC’s hosted payload initiatives. As a payload supplier to SMC programs, it is incumbent on us to provide payloads that can be adapted to a variety of platforms, including both free-flyer, dedicated satellites and multi-mission commercial and government hosted arrangements. Among the capabilities we bring to the table are scalable payloads that can be sized to meet different user needs and to fit within the host satellite weight, power, thermal and size demands. We build payloads that are largely platform agnostic and can be integrated with a variety of satellite prime power, thermal and data interface criteria. This flexibility allows us to adapt our payloads to a variety of potential platforms, not only for space but high-altitude, long-endurance air platforms as well. A good example of our capabilities is the scaling of components from Advanced EHF payloads to meet the needs of users requiring protected EHF connectivity in the high Northern latitudes where geostationary satellites do not have line of site with users. This is a hosted payload, and by all measures a success. In addition to our satellite payloads, we are now developing a control and mission planning capability that will monitor, manage and plan polar EHF communications missions. Like our satellite payloads, this control and planning capability is scalable and adaptable to user needs. We stand ready to meet DoD needs for hosted payloads with existing, proven and in-production systems that the government already trusts and deeply understands.”

### **David Anhalt, Secretary of the Hosted Payload Alliance and Vice President, U.S. Government Solutions, Space Systems/Loral**

“As pointed out in the article, CHIRP has shown the way to mature and space-qualify new technologies as well as pioneer the use of inventive, nontraditional arrangements for acquiring commercial space goods and services to enhance U.S. military capabilities. What remains is to legitimize these commercially leveraged approaches as valid alternatives during the Air Force’s early acquisition planning processes. Here is where industry can help SMC to gain access to new skill sets, data bases, and streamlined commercial business acquisition tradecraft, so these approaches can be deliberately considered during pre-Milestone A Analyses of Alternatives. I believe that robust interaction between commercial industry and SMC can overcome the remaining challenges for assessing the potential of commercially hosted payload concepts during the trade space characterization,

architecture consideration, and concept characterization reviews leading up to major milestone acquisition decisions for the next generation of military space systems.”

### **James Jordan, Treasurer of the Hosted Payload Alliance and Senior Manager, Raytheon, SAS**

“Industry should push for a more robust dialog with SMC’s mission directorates to secure an understanding of the complete value proposition that hosted payloads could provide. The discussion must move away from the qualitative positions that hosted payloads could be a possible mission solution; and move in the direction of driving definitive quantitative analyses to support a specific mission capability within a broad mission context.”



## The HPA Corner: Words Mean Things...



By Nicole Robinson, Vice Chair, Hosted Payload Alliance, +  
Vice President, Marketing + Government Affairs, SES Government Solutions

**T**he time and cost saving benefits of commercially hosted government payloads are no longer mere talking points exchanged between niche players in the industry and space-savvy users within the Department of Defense.

During his confirmation hearing as Defense Secretary Nominee, Charles "Chuck" Hagel was asked if he supported commercial hosting of Defense payloads.

"Hosted payloads are one of the ways to enhance resilience and assure space capabilities in the congested, contested and competitive space environment. If confirmed, I would support innovative approaches to improve the national security benefits we derive from space in a budget-constrained environment, including through the use of hosted payloads," said Hagel.



Charles "Chuck" Hagel, Secretary of Defense

As Hagel's statement indicates, the U.S. Government's current financial situation has driven senior officials to pay increased attention to ways in which the government can save substantially by partnering with industry to gain access to space capabilities. As advocates for, and educators of, innovative commercial solutions to deliver capabilities to orbit, the Hosted Payload Alliance is pleased to see heightened attention to this under-utilized means of accessing space.

Members of the **Hosted Payload Alliance (HPA)** were asked what they believe *Chuck Hagel's* remarks signify for the future of commercially hosted government payloads.

"We're happy to see Senator Hagel is among the supporters of hosted payloads. We fully agree with his view that hosting scaled-down versions of current MILSATCOM capabilities can substantively improve both the capacity and the resilience of these networks. We have worked closely with previous Secretaries of Defense and their staffs to craft affordable solutions to important national security problems. We look forward to a continued close relationship with the future Defense Secretary, whoever it may be."—**Rick Skinner**, Business Development Director, **Northrop Grumman**.



"Senator Hagel's remarks signify a level of understanding of the value of thinking outside the box and approaching space differently than we have traditionally. His forward-looking perspective is refreshing in that it reveals an appreciation for engaging industry in innovative ways to deliver cost effective space capability."—**Tip Osterthaler**, President and CEO, **SES Government Solutions**.



"As defense budgets and schedules continue to tighten, discussions and contractual decisions are being made to plan for a more permanent and sustainable arrangement to deploy military applications. This is right in line with Senator Hagel's remarks about utilizing hosted payloads as a solution. Whether it is a long term or permanent endeavor—hosted payloads offer a cheaper, faster and more efficient way to launch their capabilities into space."—**Dawn Harms**, Vice President of Sales, Marketing and Communications for **International Launch Services (ILS)**.



"It is great to see the progress hosted payloads have made over the last two years. Senator Hagel's comments on the value of hosted payloads as an innovative approach to fulfilling space missions demonstrates that hosted payloads are viewed as a credible option by highest leadership of the Defense Department. The Hosted Payload Alliance looks forward to working with the Office of the Secretary of Defense on hosted payload initiatives."—**Don Thoma**, CEO, **Aireon LLC**.







"Upon the confirmation of the next Secretary of Defense, we anticipate that the trend to provide viable and affordable commercial options to meet the ever increasing needs of the warfighter will continue. The expanded use of hosted payloads can accelerate our military communications and intelligence gathering capability in a responsive

and affordable manner. Ultimately the goal of our industry is for our defense infrastructure to have the necessary tools to effectively and successfully protect our interests in an extremely dynamic geo-political environment."—**Carl D'Alessandro**, Vice President of Advanced Programs and Technology at **Harris Corporation**.



"It is good news indeed to hear the man who will probably be our next Secretary of Defense take such an objective look at the best means for the DoD to meet its communications needs. Mr. Hagel joins several other open-minded thinkers in the U.S. government when he affirms the nation's needs for innovative and cost-effective communications solutions such as hosted payloads on commercial satellites. True adoption

of hosted payloads will take place once this technology is accepted and implemented by all levels of the acquisition hierarchy in the DoD and Congress. We hope Mr. Hagel will be the one to lead this."—**Nancy Nolting**, Marketing Program Manager, **Intelsat General Corporation**.



"COM DEV designs and produces spaceflight payload hardware exclusively, which we deliver to the satellite manufacturers. We have flown hardware on numerous Hosted Payloads to date, comprising military communications, remote sensing and Earth observation. Having developed a family of spaceflight products over many years enables us to rapidly respond with hardware solutions

for the Customer. The key to success in delivering Hosted Payloads on commercial satellites is all timing—often a short 24 month cycle. Senator Hagel's call for innovative approaches is most welcome and we are ready to support and participate!"—**Chris Willson**, P.Eng., Director, Business Development, **COM DEV International Ltd.**



"It is very encouraging to know the Department of the Secretary of Defense nominee is familiar with the advantages of commercially hosted payloads. To move the Department forward in this regard, industry must work with government on innovative solutions to the information assurance (IA) challenges posed by moving data from sensitive payloads through the commercial information sphere to the military information sphere. These

enabling IA technologies will make it possible to securely expand today's national security mission architectures to include affordable, commercially-leveraged elements."—**Dave Anhalt**, Vice President, U.S. Government Solutions, **Space Systems/Loral**

#### About the HPA

Established in 2011, The Hosted Payload Alliance (HPA) is a satellite industry alliance whose purpose is to increase awareness of the benefits of hosted government payloads on commercial satellites. The HPA seeks to bring together government and industry in an open dialogue to identify and promote the benefits of hosted payloads. The HPA:

- Serves as a bridge between government and private industry to foster open communication between potential users and providers of hosted payload capabilities
- Builds awareness of the benefits to be realized from hosted payloads on commercial satellites
- Provides a forum for discussions, ranging from policy to specific missions, related to acquisition and operation of hosted payloads
- Acts as a source of subject-matter expertise to educate stakeholders in industry and government.

# PointOfView: DoD + SATCOM

by Kay Sears

President, Intelsat General Corp.

**W**e have all had this experience: you hear about a mistake a person or a company made and you say something like, "Well, why didn't they just use common sense?"

We don't always realize that what we call "common sense" is often the wisdom that has come over many years of trial and error, learning what works and what doesn't. This kind of "common sense" is at the heart of a document presented to the Department of Defense earlier this year by an industry group consisting of Intelsat General, SES Government Solutions, XTAR, Telesat and Eutelsat America.

The DoD had asked commercial companies for suggestions under its Better Buying Power initiative of how to take better advantage of what commercial satellite operators had to offer. The looming budget cuts that the Pentagon faced under sequestration gave new urgency to this effort at the end of 2012.

The companies came up with a document called "Seven Ways to Make the DoD a Better Buyer of Commercial SATCOM" and presented it in January.

To an outsider, the seven suggestions might seem obvious practices to follow. But remember that the DoD has only become a heavy user of commercial satellite capacity in the last decade.





Both the industry satellite operators and the government users have learned what has worked and what hasn't in that time and are beginning to see what "common sense" might mean.

***Here is what we proposed:***

- 1. Establish a baseline of how much COMSATCOM the DoD needs, and then budget and contract for it. The problem here has been that historic DoD procurement procedures have not allowed for such contracts to be longer than a year. This needs to change.*
- 2. Develop accurate comparisons of the cost of commercial vs. the cost of military SATCOM. For an agency used to procuring and launching its own satellites, such cost comparisons have usually been apples against oranges.*
- 3. Use IDIQ contracts only to supplement baseline requirements. This goes back to not being able to sign contracts of more than a year, so the DoD has been stuck buying capacity on the spot market, at higher prices, rather than engaging in long-term agreements at lower prices.*
- 4. Build an architecture that fully integrates commercial and military capabilities. Once again, not enough planning for future needs, so we end up with redundant capabilities.*
- 5. Partner with industry to build protected communications infrastructure for space systems. With long-term contracts, the industry would be willing to invest in better protecting satellite networks.*
- 6. Use Hosted Payloads. Five years ago, "Hosted Payload" was a term few could define, but at last, the DoD is beginning to see how this could be a major way of saving money and getting capabilities to space more quickly.*
- 7. Have a single office that handles all commercial and military satellite capabilities. Right now, DISA procures commercial capacity for the military while the Air Force is responsible for capacity on military satellites. Combining this function would be more efficient.*

We have proposed nothing radical. And we are heartened that Pentagon officials at many levels are beginning to realize that the practices, such as those outlined above, will actually save the government a great deal of money. *Seems like common sense to us!*

***About the author***

Kay Sears was named President of [\*Intelsat General Corporation\*](#) in 2008 and is responsible for the overall leadership of the organization.

## The HPA Corner (Cont.)

"Over the last two years we have seen some significant progress in moving hosted payloads from theory to practice. The Commercially Hosted Infrared payload is a current example of success at hosting a government instrument on a commercial satellite but it is not the only example. Other successes include the Australian Defense Forces hosting a military UHF payload on Intelsat 22 and the Federal Aviation Administration hosting GPS augmentation on several commercial satellites. Last summer, the HPA hosted an information exchange between the newly formed Hosted Payload Office at Space and Missile Systems Center in New York City where industry and government had a productive discussion on the way ahead.

"The Critical Issues Workshop held in conjunction with the 29th National Space Symposium continued the open dialogue. We also hosted a panel on Wednesday of the NSS and used video teleconferencing to connect senior leaders in Washington DC to participate in the panel. USAF leadership has announced that they expect to release a draft request for proposals to industry to provide a resource to contract for future commercial hosting of government payloads. We expect the contract to be awarded late in 2013. This contract will be open to both USAF program offices and the broader Federal community of interest. So the progress is tangible thanks to the hard work of our USAF aided by a highly capable industrial base."

—**Tim Frei, Vice President, Communication Systems, Northrop Grumman Aerospace Systems**

"There is general consensus among government and industry that hosting government payloads on commercial satellites is an innovative approach (1) to providing access for payloads that would not otherwise have an opportunity for flight; and (2) for delivering robust and survivable architectures to meet critical mission needs. However, the challenge for both sides is learning how to operate in each other's environments and being able to co-exist on a shared platform without interfering with each other's respective mission(s)."

—**Rich Pang, Senior Director for Hosted Payloads at SES Government Solutions**

Here are some key thoughts from the panel, courtesy of the [Space Foundation's National Space Symposium website](#):

**Nickloy:** Engineering isn't the challenge with hosted payloads, its typically the business side ... We are looking for win-wins, 100 percent dedication to making hosted payloads successful ... we need to look at issues from a systems engineering standpoint, taking everything into account ...

**Beames:** We can now look at what it means to rely on something operationally on hosted payloads ... I'm optimistic for the next five years ...

**Kaufman:** When your payload is being hosted, your control over your data and equipment is significantly diminished ... If something goes wrong on the satellite, whose payload has operational priority? ... If you're on a craft that has a predetermined schedule, you have to think in advance how your payload fits into that schedule ... Cultural issues with hosted payloads are not unique to the military, but industry as well ... Hosted payloads have tremendous benefits for all parties ...

**Loverro:** Hosted Payloads have changed the dynamics of how we get things to space ... there are no policies prohibiting certain types of hosted payloads, however, we are limited by sensitive data ... it will take a concerted effort from both industry and military to make progress in the realm of hosted payloads ... Hosted payload are not necessarily an American-born or -owned idea; we all benefit from one another's experiences ... hosted payloads provide us the ability to complete missions that otherwise wouldn't have been cost effective.

**Whelan:** The sky is the limit, but we need to take calculated, gradual steps in expanding hosted payload capabilities ... hosted payloads are not an electrical engineering problem, but a social engineering problem ... Standard interfaces have upsides and downsides, but would be very helpful ... At some point we will face failure, but we are going to have to get by that in order to advance ...



Beames indicated a desire to get government laboratories and program offices to fly-test articles and to mature technology readiness levels (TRL) to TRL9 prior to going into full engineering, manufacturing and development.

The advantage of technology demonstrations is working out the "bugs" without affecting operations. Perhaps more importantly, it allows concepts of operation to be fine-tuned to determine final system requirements.

A common criticism of this approach has been that it can add years to program timelines, potentially yielding technology that is much older by the time such becomes operational.

According to the GAO report, there are more technology demonstrations using commercially hosted payloads than operational missions. Hosted Payload Alliance members were asked:

*"Do you see future hosted payloads providing operational capability to military users, or will hosted payloads be mostly experiments and technology demonstrations?"*

*"There are a few selected National Security mission areas where the use of hosted payloads on commercial satellites will not be able to meet critical warfighter requirements, but those can be counted on a single hand. For all other mission areas, hosted payloads may not be the only way to accomplish the mission, but they certainly can play a role in*

*adding diversity and resiliency to a mission area or augmenting that area. If we look beyond the National Security mission areas, I believe hosted payloads will play a key role in Science and Technology areas and in Civil space missions."*

—**Timothy Deaver**, Vice President of Corporate Development, **SES Government Solutions**

*"As the military moves towards a cost-efficient, disaggregated architecture, it seems logical that hosted payloads will play an increasing role in providing operational capabilities to the military services. In fact, we would not be surprised to see test and demonstration missions, in some cases, morphing into at least short term operational systems under a number of planned and unplanned circumstances."*

—**Tim Logue**, Senior Director, Marketing and Sales, **Thales Alenia Space North America, Inc.**

*"Hosted payloads of the future... and today... provide operational capability to military users. In fact, the most recent hosted payload delivered by Boeing is on the Intelsat 22 satellite. Launched on March 25, 2012, Intelsat 22 carries a hosted UHF*



*payload that was purchased by the Australian Defence Force. Approximately half of that content has been provided back to the U.S. Government for use in the Indian Ocean Region. The ADF has indicated that the cost savings to them by using a hosted payload on*

*a commercial satellite is 40 percent over the life of the program, when compared to a dedicated system. And, by the end of this year, we will see another launched, this one on Inmarsat 5, which will be carrying a military Ka-band switchable payload. If hosted payloads are used only for experiments and technology demonstrations, then we have failed as an industry to deliver innovative solutions that meet critical mission requirements."*

—**James F. Mitchell**, Vice President, **Boeing Commercial Satellite Services**

*"The U.S. government has a long history of hosting both technology demonstrations and operational payloads on its satellites to fill coverage and capability gaps. Prominent examples include the Nuclear Detonation Detection System on Global Positioning Satellites (GPS) and the Space Based Infrared System's Highly Elliptical Earth Orbit payloads. Technology demonstrations are an obvious choice for initial forays into hosting military*



*payloads on commercial satellites because the real goal is to get the payload into space and measure its*

*performance. Long-term, though, we see a different future for hosted payloads. The Federal Aviation Administration is pointing the way with operational Wide Area Augmentation System payloads on commercial satellites for air safety. A measured approach beginning with hosting on government-owned satellites will build business skills, technical acumen and confidence, leading to operational missions. This allows government agencies and their industry partners to use the hosted payload process to their best advantage."*

—**Tim Frei**, Vice President, Communication Systems, **Northrop Grumman Aerospace Systems**





## Question for HPA members:

### How should policy evolve so foreign launches of U.S. Government payloads can take better advantage of trusted launch providers?

"Our customers have proven that there are no barriers to launching a hosted payload on ILS Proton—whether it has a civil, military or other sensitive government application. In fact, the majority of ILS Proton launches within the past twelve months were either hosted payloads or dual-use payloads for a wide range of customers from all corners of the world. U.S. policies may need to be adapted or modified to include this cost-effective and schedule efficient launch solution very early in the program development process. This would enable all parties involved—from the launcher, the satellite manufacturer, operator and integrator—to properly assess the technical feasibility as well as the benefits, of commercial launch."—**Dawn Harms, Vice President of Marketing, Sales and Communications, International Launch Services (ILS)**



"A waiver is currently required to fly on foreign "trusted" launch vehicles. As the United States government evolves to utilization of Hosted Payloads, such as through the U.S. Air Force's Hosted Payload Solutions (HoPS) initiative, foreign launch vehicles will inevitably be used due to the primary commercial host satellite and launch vehicle selected. Because of this, a more streamlined waiver process is needed."—**Jim Simpson, Vice President Business Development, Boeing Space & Intelligence Solutions**



"Remove the language from the U.S. Space Transportation Policy that requires U.S. Government payloads to be launched on space launch vehicles manufactured in the United States. Most trusted launch providers fit within the comfort zone of U.S. diplomatic strategies and support U.S. interests for free market economics, sound security measures, and technology safeguards. Opening up the launch vehicle market internationally for U.S. Government payloads will foster healthy competition and drive down costs, which benefits U.S. Space Acquisition and the U.S. taxpayer in today's fiscally constrained environment. Policy must change now so the U.S. can afford to modernize U.S. Space capabilities through the employment of timely, resilient and disaggregated space architectures that will only be possible from a wide range of Space Launch choices."—**Eric Moltzau, Senior Principal Director, Intelsat General Corporation**



"An update to the U.S. Space Transportation Policy, last published in 2005, is nearing completion. This policy update will likely allow a limited set of U.S. Government offices to take advantage of capabilities offered by trusted launch providers while continuing more stringent approval requirements on other payloads. If that is the case, the change didn't go far enough. The current U.S. export control laws provide ample protection for U.S. technology and hosted payloads should be treated no differently. SES, Orbital, SAIC, and Arianespace proved that launching classified hardware from French Guiana can be done. During the launch preparation for SES-2 and the Commercially Hosted InfraRed Payload (CHIRP), we had to make only minor changes to Arianespace's standard procedures to launch hardware classified at the DoD secret level. As the U.S. expands its international outreach in select National Security programs like WGS, AEHF, perhaps it is time to include launch in those discussions also."—**Tim Deaver, Vice President, Corporate Development, SES Government Solutions**



"While it doesn't seem as though hosted payloads have been around very long, the truth is that the U.S. government has been hosting various payloads on satellites for 50 years. Commercially hosted payloads bring a unique set of requirements for security, ITAR, IP protection, and other considerations. The mission is always the first concern whenever the U.S. government contemplates launching a hosted payload, for there can be little room for error when the nation's interests are at stake. The current process already allows for commercial hosting. By definition it is not easy, since the interests of the commercial host and the payload provider often differ. The current process already assesses against these factors, so major changes seem unwarranted. Furthermore, many other governments have policies that limit the field of launch providers, so greater access domestically should be balanced with greater access into the international market. Finally, the U.S. government has evaluated non-U.S. launch services because of the perceived shortage of commercially available U.S. launchers. Space-X, Orbital Sciences, and Lockheed Martin are all on a path to provide plenty of affordable indigenous lift, thus fulfilling any perceived gaps."—**Robert R. Cleave, President, Lockheed Martin Commercial Launch Services**



"Arianespace is a proven, trusted provider of launch services for the commercial space sector. Recent successes by SpaceX's Falcon 9 and Orbital's Antares indicate there will soon be two new affordable American options for commercial space lift. However, [until these new launch service entrants establish routine operational tempo] the commercial world will remain predominantly reliant on foreign launchers. Currently, U.S. Space Transportation Policy requires that the White House Office of Science and Technology Policy (OSTP) along with the National Security Council (NSC) grant an exemption when U.S. Government payloads are planned to be launched on non-U.S. rockets. Consequently, it is very important that U.S. Government sponsors of commercially hosted missions seek this exemption very early in the planning cycle to legitimize the hosted payload mission concept before formal Analyses of Alternatives are commissioned. By the same token, OSTP and the NSC should have the authority to grant exemptions at least on a conditional basis during this early concept forming period. We hope that the policy will be modified to be more transparent and to provide for time limits on the government's exemption deliberation process."—**Dave Anhalt, Vice President + General Manager, Iridium PRIME**



"The U.S. Government should lift policy restrictions that keep federal agencies from using foreign commercial launch services, within the confines of export licensing regulations carried out by the U.S. State and Commerce Departments. This assumes we're talking about U.S. policy and non-U.S. launch of U.S. Government payloads. The hosted payload builder and Government team should weigh the program cost benefits of a potentially lower cost hosting and launch with the cost of additional security at both the host integration facilities and launch base. While it may have served us well in the past to guarantee a customer base for U.S. launch providers, there is little need for explicit policy as the export licensing process should suffice. There are launch nations that will not pass government scrutiny, of course, with North Korea and China among them. But NATO-member nations and others with which we have close alliances could be acceptable. Let the market and negotiations determine the best deal where there are not overriding technical and security constraints."—**Tim Frei, Vice President, Communication Systems, Northrop Grumman Aerospace Systems**



For further information regarding the Hosted Payload Alliance, please access their website  
<http://www.hostedpayloadalliance.org>



## About the author

Aaron Lewis, Director of Media and Government Relations for Arianespace has been with the company since 2004. Previously he served for a decade in the U.S. House of Representatives in various policy and communications strategy roles. He has a degree in Classics and the History of Math and Science from St. John's College, Annapolis, Maryland.

## POV: CHANGING THE WAY THE DOD BUYS SATCOM

By Robert T. (Tip) Osterthaler, President + Chief Executive Officer, SES Government Solutions

**C**ongressman Mike D. Rogers (R-AL) recently published an article entitled, "Changing the Military's Approach to Commercial Satellite Communications," and it was refreshing to see a leading member of the House Armed Services Committee seriously addressing an important if somewhat obscure issue.

I suspect there haven't been many votes either won or lost over the question of whether (or how) the Department of Defense reforms the way it buys commercial satellite capacity, but the stakes are surprisingly high and the Congressman and his staff deserve a lot of credit for taking the lead in a discussion that has been ongoing (but, unfortunately, going nowhere) for years.

In his article, Congressman Rogers points out that current DoD SATCOM procurement practices are both costly and risky, facts which no one in the industry would dispute. While I doubt it is their official acquisition strategy, today's reality is that the government buys commercial capacity when and where it needs it, accepting whatever performance it provides, paying whatever it costs, and accepting the risk of non-availability. To be fair, other than being much more expensive than it needs to be, this approach has worked satisfactorily during our decade of heavy engagement in Iraq and Afghanistan. Unfortunately though, that's not likely to be the case in the future.

Regarding cost, reform efforts to date have focused primarily on changing the way DoD leases satellite capacity. In the 2014 National Defense Authorization Act, Congress calls on the Pentagon to prepare a strategy for the expansion of satellite acquisition authorities that would effectively help to reduce risk and cost to the Department. Specifically, DoD is asked to examine the use of longer and larger quantity leases, and those changes will help bring lease costs into line with what large commercial customers pay.

To his credit, though, Congressman Rogers is looking beyond cost. In his piece, he observed that the current methodology "lacks strategic foresight, puts our troops at risk, and disadvantages our industrial base." Over the past year, he has led an effort to ensure our warfighters are not dependent for critical communications on satellites that are under the control of unreliable partners, such as China, and his efforts have yielded budget language that places strict limits on the practice. That legislation went a long way toward addressing the risk and industrial base questions, but the issue of "strategic foresight" remains.

In recognizing that the manner in which the government purchases satellite capacity today is short sighted, Congressman Rogers has taken a logical leap that others have missed: Commercial satellite capacity is essential infrastructure for our troops and will remain so in the future.

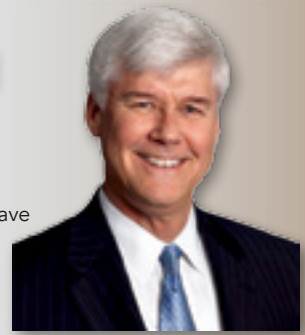


Photo of Tip Osterthaler at the Capital in Washington D.C., courtesy of SES GS.  
The photo is by Jason Dixon.





Congressman Rogers is greeted after stepping off the airplane during his recent CODEL he led to United Arab Emirates and Afghanistan. The visit included several meetings, security briefings, site visits and lunch with soldiers from Alabama's Third Congressional District. Rogers serves as the Chairman of the House Armed Services Strategic Forces. Photo courtesy of Mike Rogers' Congressional website.

Given that reality, we should not limit ourselves to buying it in the same way we buy janitorial services, using one-year contracts and behaving as if there were an unlimited number of potential providers. In fact, the most important satellite related language in the bill encourages the Defense Department to continue its efforts to implement alternative buying strategies that would better leverage the capabilities of commercial industry and ensure the future availability of adequate commercial bandwidth to meet DoD needs.

By encouraging the Pentagon to explore the use of completely new approaches and expressing his support for innovation in the acquisition of satellite communications, Congressman Rogers has opened the door to a variety of alternative approaches, such as the ongoing Space and Missile Systems Center Pathfinder program that seeks to acquire more reliable and affordable communications capabilities to support the US Africa Command.

Although previous, similar initiatives have been killed by defenders of the status quo inside and outside of government, the Chairman's intervention ensures that future attempts to innovate will at a minimum be given a fair hearing.

From an industry perspective, Chairman Rogers' leadership and initiatives such as Pathfinder are welcome because they enable us to look further into the future and justify investments in the capabilities the Department is likely to need from us years from now, something we have had great difficulty doing in the one-year-lease environment. This is particularly

important if we are to allocate the capital necessary to build up capacity in the vast Asia Pacific region where there is currently little available spare bandwidth.

As the pace of operations slows in the Middle East and Southwest Asia and requirements grow in Africa and the Pacific, demand and supply patterns

for satellite communications are changing, but what is not changing is the fact that commercial satellites provide much of the communications backbone needed by our Soldiers, Sailors, Airmen and Marines wherever they are stationed.

By taking the lead in improving the way the government and the satellite industry work together, Congressman Rogers is looking after the interests of both our warfighters and our taxpayers.

#### About SES GS

In SES Government Solutions, SES has combined three decades of Americom's USG experience with the global capabilities and assets of the SES satellite fleet. The result is a new organization, formed in April 2010, created solely to provide bandwidth and hosted payload opportunities to U.S. Government, Intelligence and Civilian agencies.

SES Government Solutions continues Americom's corporate record of serving the U.S. Government SATCOM market since 1973. As the only operating company within the SES family focused on USG, we back every Government mission with a long-standing record of technical achievement, operational excellence and service commitment.

From additional bandwidth to hosted payloads, SES Government Solutions brings world class experience, industry-leading reliability and unrivaled resourcefulness to your mission. No one delivers solutions as quickly or as cost effectively as SES Government Solutions.

With 55 satellites already in orbit covering 99% of the world's population, and a robust satellite schedule that includes 4 satellite launches between 2013 and 2015, SES Government Solutions ensures future capacity and an abundance of hosted payload opportunities in the years ahead.

The SES GS infosite is located at: <http://www.ses-gs.com/>

#### About the author

Mr. Robert Tipton (Tip) Osterthaler joined SES in 2006 when he became the President and CEO of AMERICOM Government Services. Since then, the wholly-owned subsidiary of SES SA has grown and integrated with other government focused elements within SES to become SES Government Solutions (SES GS).

During his tenure at SES, the U.S. Government business has been transformed from a product oriented sales channel into a solutions-focused independent subsidiary responsible for all aspects of SES's US Government business, including planning for the next generation of satellites that will be needed by government users. Under his leadership, SES Government Solutions transitioned into a Proxy Corporation structure, allowing the company to broaden its business base to include a wider range of customers and technologies. In 2008, SES GS entered into a ground breaking contract with the US Air Force to fly the Commercially Hosted Infra Red Payload known as CHIRP, and in 2009, SES GS did its first ever acquisition, enabling the company to better serve the intelligence community.

From 1997 until 2006, Tip was a Senior Vice President at Science Applications International Corporation (SAIC) where his last assignment was Deputy General Manager of the Strategies, Simulation and Training Business Unit, a 2,300 person organization which provides government and commercial clients with advanced modeling, simulation and training solutions.

Prior to joining SAIC, Tip served in the U.S. Air Force for 28 years, retiring as a Brigadier General and Deputy Assistant Secretary of Defense for European and NATO Policy. Earlier positions included Vice Commander of the Air Intelligence Agency and numerous command and senior staff assignments. Mr. Osterthaler is a Command Pilot with over 3,200 hours of flying time in fighter aircraft including multiple models of the F-15 Eagle. Upon his retirement, he was presented the Defense Distinguished Service Medal, the nation's highest peacetime defense award.

Tip holds a BS in Economics from the U.S. Air Force Academy and an MBA from Texas A&M University. He is also a graduate of Harvard University's Senior Executives in National Security and National and International Security Management programs, the Royal College of Defense Studies in the United Kingdom, the Air War College, and the Marine Corps Command and Staff College.

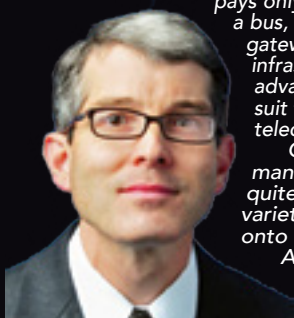


"As hosted payloads become routine, they will necessarily fashion widespread spacecraft and launch vehicle interfaces and shorter integration cycles, which in turn will encourage more, new hosted payloads."—**Major General Jim Armor USAF (Ret.) and vice president, Strategy and Business Development at ATK Space Systems Division**



"The concept of a modular bus with an open architecture has great potential and we commend the ORS and Northrop Grumman efforts. It is yet another in an emerging broad range of cost-effective variations on the hosted payload concept. The advantage of a hosted payload on a commercial spacecraft means that the government mission

pays only for a small cost share of a bus, launch and potential use of gateway and terrestrial network infrastructure. To obtain these advantages, the bus will have to suit the requirements of a typical telecom satellite.



Commercial telecom satellite manufacturers have become quite adept at integrating a variety of hosted payload missions onto their heritage bus platforms.

At SSL we launch six or seven satellites a year and have for many years.

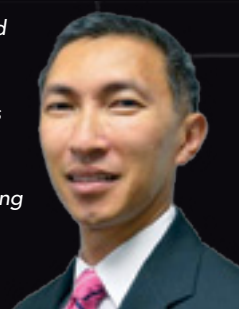
Throughout this time we have been evolving our spacecraft bus to suit the changing needs of the world's commercial satellite service providers. The 1300 satellite bus is also a modular platform with ample real estate and power capability for services such as direct-to-home television and broadband Internet as well as various hosted payload missions. The company has a track record of hosting a wide variety of sensor payloads at a marginal fraction of the overall satellite cost, while maintaining commercial production schedules under fixed price contracts.

Recently NASA has taken an innovative approach to an upcoming laser communications demonstration by working with SSL to create an interface that can be integrated onto any of our 1300 spacecraft in advance of selecting the particular host. This approach balances the advantage of a common interface architecture with the unique design requirements of today's telecom satellites."—**Eric Spittle, President, SSL Federal**

"We don't believe that all hosted payloads are equal. There are systems that are autonomous from the primary mission and the satellite, and in these cases we can provide SWAP (size, weight and power) and standard interfaces (akin to a USB port) that can easily be accommodated. Other hosted payloads require additional capabilities and are more integral to the design of the satellite. For these more "custom" payloads a standard interface would be applied. With the advent of "space wire" and movement to "cloud" approaches, the evolution of even more standard interfaces for hosted payloads are in the very near future, and in some cases now!"—**Jim Simpson, President, Boeing Satellite Systems International, Inc.**



"Separate development paths for hosted payloads and main mission platforms will allow less mature capabilities to be inserted at the appropriate time to ensure they meet the stringent timelines associated with most commercial missions. The preference is for hosted payloads to be included in the overall design of a given satellite at the beginning of a program but if that is not possible, hosted payloads need to be designed with enough flexibility to accommodate



multiple platforms. Standards already exist today and may vary a bit between satellite manufacturers but payloads can be easily accommodated. Even in today's satellite communications industry, all satellite manufacturers need to integrate various communications payloads from a number of communications payload providers—all with varying standards."—**Rich Pang, Senior Director, Hosted Payloads, SES Government Solutions**

"We see a slow evolution towards more commonality because organizations driving it—the Air Force Research Laboratory with the Modular Space Vehicle, and the Office of the Director of National Intelligence with the Space Universal Modular Architecture—are pushing towards common interfaces and more plug-and-play. The advantages of migrating to standards will be accrued to both hosted and hosting missions since fewer variables will mean less custom design, modeling, simulation and testing. That will save money and decrease cycle time while providing more flexibility in hosted mission integration. It also should improve reliability by reducing anomalies. We'll caution that a one-size-fits-all set of interfaces isn't likely because of differences in hosted missions and the extent to which hosted payloads will depend on host infrastructure, such as command and communications. And standards will not be static, of course—they will have to evolve as technology improves capabilities."—**Tim Frei, Vice President, Communication Systems, Northrop Grumman Aerospace Systems**



For additional information regarding the Hosted Payload Alliance, please access <http://www.hostedpayloadalliance.org/Home.htm>



# NSR ANALYSIS: HOSTED PAYLOADS— A BALANCING ACT FOR OPERATORS + MANUFACTURERS

By Carolyn Belle, Analyst, Northern Sky Research (NSR)

**H**osted payload has become a catchphrase within the satellite industry in recent years, and with the first U.S. Hosted Payload Solutions (HoPS) program contracts expected this June, it will draw more attention and expectations in the overall manufacturing market. A growing base of pilot programs and alternative hosting methods from manufacturers support an expansion of the use of hosted payloads, yet challenges remain before the model attains sufficient maturity to be implemented across the spectrum of potential applications.

## Benefits Of Cost + Schedule

A main piece of the hosted payload value proposition has always been, and will continue to be, cost savings for both the primary operator and the hosted payload owner. This is a more significant driver for GEO hosted payloads, where higher manufacturing and launch costs heighten the savings of using only part of a satellite.

According to Tip Osterthaler, president of SES Government Solutions, the U.S. Air Force's CHIRP technology demonstration payload onboard SES-2 cost only 15 percent of what an Air Force satellite with the same payload could have cost, providing equivalent data that will be integrated into the military's modernization planning over the coming years. The value of cost savings applies equally to operational payloads or technology development missions, and to government and military projects or commercial ventures.

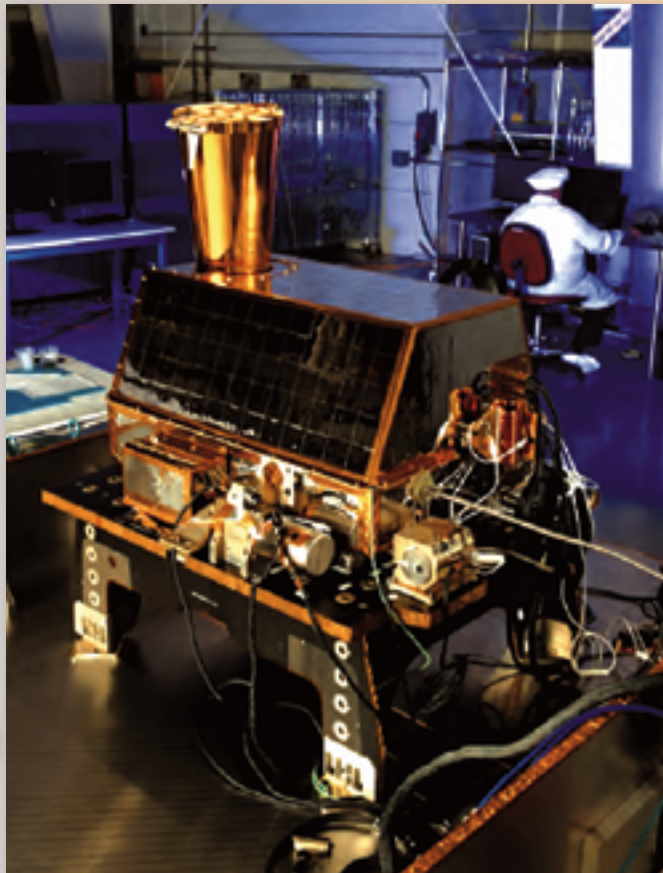


**Tip Osterthaler,**  
SES GS

Commercial satellite programs are fast to market, giving hosted payloads an advantage compared to the long timelines that plague most government and military platforms. Though this is likely a stronger driver for technology development payloads requiring verification before being used in a full-scale project, operational missions that can be readied in a short period of time also benefit from speedy implementation.

The three-year turnaround from WAAS concept definition to operational service onboard Galaxy 15 and Anik F1R, including a full year of on-orbit testing and verification, allowed the FAA to quickly and effectively provide enhanced navigation services to the aviation industry. When hosted payloads provide a faster return on investment they boost the business case of such enterprises, a factor that will contribute to their increased adoption by the commercial sector.

The inclusion of Aireon payloads onboard all 66 Iridium NEXT satellites launching between 2015 and 2017 highlights the beneficial ability to quickly create a distributed architecture by using a large number of host satellites. Surprisingly, it is this privately-owned company that has created the biggest hosted payload program yet, when government customers are traditionally considered the main target market.



*SES Government Solutions hosted the first ever experimental U.S. Air Force sensor on an SES satellite operating over the United States. CHIRP (Commercially Hosted Infrared Payload) was successfully launched on September 21, 2011 from Kourou, French Guiana. Photo courtesy of SES GS.*

The number of commercially-owned hosted payloads in orbit will increase through the 2010s as Aireon launches, with a surge in diversity of hosted payload applications and owners coming towards the end of the decade. This will be largely focused on LEO platforms.

## Rethinking The Operational Structure

These positive market forecasts are spurred by new concepts that may allow more hosted payloads to fly simultaneously and alleviate some constraints imposed by subordinating hosted payload requirements to a primary payload. Iridium, Surrey Satellite Technology-US, and Vivosat are all offering platforms that provide a satellite bus and orbital guidelines, but instead of housing a primary payload provide space for a number of hosted payloads. This increase in the mass, power, and volume available to the hosted payloads will enable potential applications that have previously been too demanding on satellite resources, opening the door to more commercial participation in the market.



Each of these platforms offers further distinct advantages that will drive growth. The ViviSat Mission Extension Vehicle (MEV) will provide a different hosting environment than presently available onboard communications satellites, thereby opening new opportunities in GEO. ViviSat also uniquely allows the hosted payload to become primary when the MEV is between satellite life extension missions, an attribute that will attract a specific subset of missions.

For many applications, the inconsistent line of sight inherent in LEO is problematic; Iridium's PRIME program addresses this weakness. PRIME satellites will link to the NEXT constellation of 66 satellites, routing communication through the constellation and thereby providing contact with the hosted payload at any point in its orbit. PRIME will enable more innovative ideas and technology development missions to be implemented—applications that require both a low orbit and constant communications, but do not have sufficient capital to create the necessary constellation independently.

### Challenges + Impediments

However, the complications of implementing a hosted payload project cannot be overlooked when forecasting the role it might play in the satellite market in coming years. Schedule slippage is a key risk. The CHIRP payload was one year behind schedule, a consequence of complexity that not only added \$17 million to the total program cost (thereby diminishing but not negating the cost savings of using a hosted payload) but also required a change in the launch order of SES satellites to ensure regional coverage while waiting to launch SES-2 until CHIRP was ready. Addressing this concern requires more advance planning and upfront investment in the payload even before securing an appropriate hosting partner, an uncertainty that could become a sticking point for strapped government budgets.

Both the primary operator and hosted payload owner are pushed to make compromises during the joint project, and both business cases generally evolve. While this level of balancing should be proportionate to the requirements of the hosted payload, some hosted payload owners still expect too much accommodation from their host and are insufficiently willing to innovate. If this continues unabated, it will restrain the number of hosted payloads launched.

Furthermore, best practices for matching hosted payload designs with potential commercial hosting partners remain ambiguous. The puzzle-piecing approach taken by SST-US to compile proposed payloads into a set for integration on an Orbital Test Bed satellite could allow the creation of a hosted payload catalog for later recombination into a series of OTB satellites. In the case of WAAS, Lockheed Martin as the payload manufacturer was responsible for matching the payload with a suitable host satellite. Alternately, some operators already suggest inclusion of a hosted payload within RFPs issued, seeking to explore how hosting another payload could improve their business case.

While early hosted payload projects have laid groundwork for contractual issues that must be addressed, the contract process must be further streamlined to both facilitate participation and reduce and/or allocate risks. This is of particular importance for government and military missions. CHIRP established a foundation for the way commercial operators must think about transmitting sensitive military data without risking security, yet additional thinking is required. The question of priority in the case of a partial satellite or subsystem failure must be clarified. As more hosted payload projects are undertaken these concerns will decrease in importance, but the unfamiliarity with hosted payload contracts is a present limitation.

### Bottom Line

The market potential for GEO and LEO hosted payloads is diverging: New opportunities in LEO will lead to higher growth in this market (especially for commercially owned payloads), while the GEO hosted payload market will continue to be dominated by government and military customers and experience slow growth until the above concerns are further addressed.

Hosted payloads are not a magic solution for the cost restrictions of government and military programs, nor are they applicable to all business cases. Ultimately, hosted payloads will be a niche market for applications and remain a low cost avenue for technology demonstration.

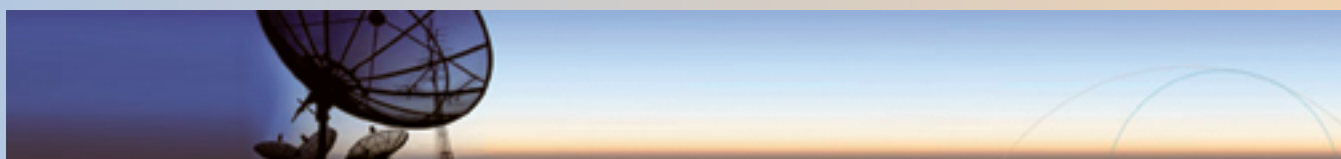
#### Editor's note

Information in this article was extracted from the new NSR report *Satellite Manufacturing and Launch Services, 3rd Edition*, which now includes the industry's only segmentation on the Hosted Payload market. Complete information on the company may be found at <http://www.nsr.com>. For additional details regarding the *Satellite Manufacturing and Launch Services, 3rd Edition*, report, access <http://www.nsr.com/research-reports/satellite-communications/satellite-manufacturing-launch-services-3rd-edition/>.

#### About the author

Carolyn. Belle joined NSR as an analyst in 2014, focusing on satellite launching and manufacturing, as well as Earth observation. Ms. Belle comes to NSR from the Research and Analysis team at the Space Foundation, where she contributed to the creation of *The Space Report 2014*. Her research efforts primarily addressed new and emerging space products and services.

Ms. Belle received a Master's degree in Space Management from International Space University and her Bachelor's degree from The Colorado College with a focus in Biology and Chemistry. Ms. Belle has completed several internships at the NASA Ames Research Center.



"When we talk about hosted payloads, it is important to note that a primary issue relative to U.S. government satellite systems is the proprietary nature of the related ground infrastructure. These are stove-piped systems, each with its own infrastructure and little or no inter-compatibility, making data transport on the ground less resilient, expensive to operate, and even more expensive to upgrade.



"Hosted payloads on commercial satellites can provide disaggregation of mission capabilities and leverage the primary communications payload for access into a remarkably resilient, redundant and widely geographically dispersed array of gateways, teleports and connecting fiber networks all using interoperable standards.

"With today's advanced encryption and data protection schemes, government missions can gain secure resiliency by directly leveraging this abundant ground infrastructure. It may well be that the secure leverage of commercial ground infrastructure, is one of the biggest benefits that hosted payloads bring."—**Eric Spittle, President, SSL Federal**

"As the U.S. Government develops its architectures of the future it must ensure critical capabilities are sufficiently robust to survive the ever increasing environmental and adversarial

threats of the space and terrestrial ecosystems. Innovation and non-traditional solutions, like hosted payloads, must be considered especially in an atmosphere where affordability is fundamental to all decisions. Not every individual system has to be equally survivable, but the overall system architecture must be designed with sufficient resilience to continue providing the needed capabilities through all levels of conflict.



"Disaggregation, the separation of dissimilar capabilities into separate payloads and/or satellites, in and of itself does not provide resilience but it most certainly enables resilience. By not putting all your eggs in one basket, systems become less complex and issues in one area do not end up delaying the entire program. Once disaggregation occurs, less exquisite capabilities can be readily hosted on commercial satellites. And because of the frequency of commercial launches, the U.S. Government is afforded the opportunity for regular and timely insertion of the latest technologies."—

**Rich Pang, Senior Director, Hosted Payloads, SES Government Solutions**

Additional information is available at the HPA infosite  
<http://www.hostedpayloadalliance.org/>



# THE HPA CORNER: POLICY + LEGISLATION ENCOURAGE HOSTED PAYLOADS... SO, WHAT'S THE HOLD UP??

By Nicole Robinson, Vice Chair, Hosted Payload Alliance + Corporate Vice President, SES Government Solutions

**T**he time and cost benefits of commercially-hosted government payloads have been touted across the satellite industry for years, from payload and satellite manufacturers, to fleet owner/operators, system integrators, and even launch providers.

In recent years, innovative industry and Government leaders working with the United States Air Force, the European Commission and the Australian Defense Force have provided governments around the world with example hosted payloads that have validated the value of this efficient means of leveraging industry and accessing space.

With experience under our belts, and government doctrine lending support to hosted payloads, the question remains: why aren't hosted payloads more commonplace? Why in an austere budgetary environment, is the U.S. Government finding it challenging to launch additional cost-saving hosted payload programs?

The U.S. National Space Policy explicitly directed the use of non-traditional options for the acquisition of space goods and services, and cites hosted payloads as one of these non-traditional options. In 2013, the Defense Business Board recommended that the DoD, "Continue hosted payload efforts and their ability to fill special needs in a short time frame." Within the FY14 National Defense Authorization Act, Congress directed the DoD to craft a Space Acquisition Strategy (Section 913) in which alternative business models are to be considered to access space capability—and specifically listed hosted payloads as one such model.

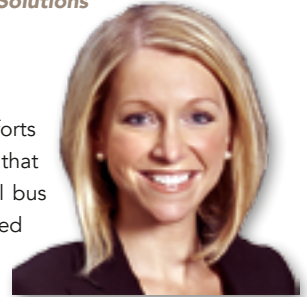
## ***This column's Question For HPA members***

*With such clear, strong encouragement coming from policymakers, Congressional leaders and senior DoD officials, what can be done to further connect the requirements, proposed solutions, acquisition models and budgets to foster an environment in which hosted payloads become an integral part of the various space mission architectures going forward?*



"It is incumbent on industry to bring forward fully priced business case analyses showing how the U.S. Government can leverage the highly competitive satellite bus market and significant commercial investments already being made in space infrastructure to procure more affordable, resilient and time-efficient space capabilities that government agencies can depend upon and adapt as mission needs evolve. By taking advantage of commercial hosting opportunities, U.S.

Government can focus its efforts on procuring mission payloads that can be supported by commercial bus capabilities. This payload-focused acquisition strategy can create stable payload production rates, thereby stabilizing lower-tier suppliers and focusing development resources on maintaining intellectual capital needed for unique government capabilities."—**Dave Anhalt, Vice President + General Manager, Iridium PRIME**



"While the government has done much work to foster an environment conducive to commercially hosted payloads, there is still work to be done.

"Perhaps the greatest single challenge to mainstreaming commercially hosted payloads is the difficulty in establishing them as an integral part of system architectures. Though there is on-going work within several organizations in the USG, until hosting is viewed as an integral program component, and funded accordingly, hosting will be difficult and intermittent. The inability of the DoD to pre-commit funds for commercial integration of hosted payloads also remains problematic. Contained within the discretionary budget, payment for these services is subject to annual approval by Congress and pre-payment violates USG FAR procurement laws. As such, the return on investment for the commercial company owning the host asset is far from secure unless the costs are heavily recovered in the first year or two on orbit. Legislation to allow for changes to these rules may be necessary. Furthermore, the government acquisition cycle needs to adjust to allow for long-term procurement contracts to fully take advantage of the commercial industry's inherent cost savings, shorter time cycle to place payloads in orbit, and the disaggregated nature of commercial constellations."—**Skot Butler, Vice President, Satellite Networks & Space Services, Intelsat General**





"We must help the U.S. Government to transition from programs of record from the last decade to more resilient, disaggregated systems with smaller hosted payloads, more economical space vehicles, and commercial-like approaches to architecture, while keeping within the DoD budget. In order to accelerate the adoption of hosted payloads, we need to create an environment that enables contractors and government to work together. The National Space Policy provides the vehicle, but it is hampered by sub-policies and guidelines that inhibit contractors from providing commercial solutions cooperatively with the U.S. Government, because these sub-policies and guidelines create additional risks that a commercial contractor will not take. By eliminating these impediments, the government will benefit significantly through the use of commercially available services, and DoD budgets can be more efficiently allocated, since the outcome will result in costs savings of hundreds of millions of dollars."—**Jim Simpson, President, Boeing Satellite Systems, International Inc.**



"As illustrated by the author, policy, guidance and senior leader support is favorably emerging for new capability approaches, but hosted payloads have yet to be produced in significant quantities to satisfy government requirements. Why? Notably, the U.S. Government has yet to formally specify requirements for disaggregated systems and prove the affordability case. Though virtually all major military space systems designed and developed in the past decade are in production and sustainment phase, the U.S. Government has several mission area analyses of alternatives progressing that will inform their respective next generation systems. These on-going architecture assessments must ultimately determine the right mix of capabilities to satisfy requirements with the context of total system affordability. When fully analyzed with recent study data provided by commercial industry, I believe new mission capability approaches will prove favorable for hybrid constellations comprised of large single mission systems augmented by dispersed payloads on commercial spacecraft."—**Chuck Cynamon, Vice President, Business Development, SSL Federal**



"HPA members as a group are reaching out every day to all constituencies for hosted payloads, especially congressional members and military leaders. We have developed and are delivering consistent messages so that all audiences hear the same thing. And we deliver those constantly. The challenge is adding more value each time we meet with members of Congress, their staffs and those in the Defense Department. The upgraded HPA website is well on its way to helping further the hosted payloads discussion. We should support it with the right content and leverage it in our campaign as much as possible."—**Tim Frei, Vice President, Communication Systems, Northrop Grumman Aerospace Systems**



"Cost and schedule benefits of utilizing hosted payloads alone will not be sufficient to change the current acquisition practices of the U.S. Government. Current programs of record will need to run their course because often times it can cost more to terminate a program. However, the continuing decline of the defense budget will force defense planners to consider more cost effective and innovative options to meet the ever increasing demands of warfighters and other end users. Given the proof being provided by the many pathfinder programs like the Commercially Hosted InfraRed Payload (CHIRP) and the Australian Defense Force (ADF) Ultra High Frequency (UHF) hosted payload, the U.S. Government will recognize the benefits of harvesting the well-established and successful commercial enterprise to help meet their requirements. Hosted payloads will not work for all requirements but they will provide frequent access, on-time and on-budget, adding resilience to a mission architecture through diversity and redundant capability."—**Rich Pang, Senior Director, Hosted Payloads, SES Government Solutions**

#### **About the HPA (<http://www.hostedpayloadalliance.org/>)**

Established in 2011, The Hosted Payload Alliance (HPA) is a satellite industry alliance whose purpose is to increase awareness of the benefits of hosted government payloads on commercial satellites. The HPA seeks to bring together government and industry in an open dialogue to identify and promote the benefits of hosted payloads. The HPA:



- Serves as a bridge between government and private industry to foster open communication between potential users and providers of hosted payload capabilities
- Builds awareness of the benefits to be realized from hosted payloads on commercial satellites
- Provides a forum for discussions, ranging from policy to specific missions, related to acquisition and operation of hosted payloads
- Acts as a source of subject-matter expertise to educate stakeholders in industry and government.





## THE HPA CORNER: DESIGNING A DEFENSIVE ARCHITECTURE

By Wendy Lewis, Director of Communications, Space Systems/Loral (SSL)

**A**t the May 22nd Hosted Payload Alliance board meeting, which was held in conjunction with the Space Symposium in Colorado Springs, Colorado, Mr. Doug Loverro, Deputy Assistant Secretary of Defense for Space Policy, discussed the next-generation architecture for the Department of Defense. He told the group that over the next few months, government agencies are developing the strategy for this new architecture, which must integrate Air, Land, Sea and Cyber resources in a way that cannot be contested.

He explained that in the past, when American technology dominated the world, and budgets were unlimited, we were able to take an approach to our space environment which did not have to consider other conventional threats. In today's world, where the threats from adversaries are increasing and space is more highly contested than ever, Mr. Loverro suggested that a more defense-minded approach was logically needed. He referred to this as an historical moment when we need to move from an offense-dominated regime to a defense-dominant regime.

In an offense-dominant regime, where large, highly sophisticated assets that might take billions of dollars and a decade to develop and build dominate the architecture, an adversary on the offensive has an advantage—he can cripple such an architecture with far less effort than it took to build it. A defense-dominant regime flips that on its head. It is designed so that no single target would have the potential to cripple national security, and that the actions an adversary would need to take become far more taxing than the capability he seeks to deny.

While hosted payloads are not the complete solution for a defense-dominated architecture, it is clear that they could play an important role.

### **This month's question for HPA members:**

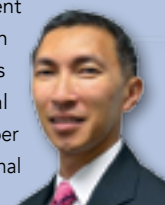
***From your perspective, as members of the Hosted Payload Alliance, how can hosted payloads on commercial satellites be woven into the fabric of a new architecture? Mr. Loverro encouraged industry to contribute to the dialog to help determine "what is the right architecture." What ideas would you throw into the ring?***

"Hosted payloads can be an integral part of the new architecture, complementing missions that support communications, situational awareness, air traffic control, and Earth sensing. Inmarsat and Intelsat have demonstrated that existing payloads are transparent to the ground systems of WGS, UHF, and others. Commercial satellites in geosynchronous orbit can be used for neighborhood watch, as well as missile warning as part of CHIRPs.



"Protected waveform technology is being demonstrated today that will enable tactical protected communications at a fraction of the cost of EHF tactical capabilities. Hosted payloads can be quickly reconstituted, and they are disaggregated, other key enablers to compatibility with the new architecture. Hosted payloads can also be managed independently from the satellite operator and can provide the appropriate security. Finally, from an economics perspective, shared launches and shared satellites enable substantially lower prices, and can also be sold as a service to maintain steady consistent budgets during acquisition spikes."—**Jim Simpson, President, Boeing Satellite Systems International, Inc.**

"As is often said, space is a congested, competitive, and contested operating environment. A resilient mission architecture requires diversification of capabilities among multiple platforms to help mitigate risks presented by natural hazardous conditions, the growing number of satellites, orbital debris, unintentional and intentional interference, and the continuing development of counter-space weapon systems.



"Hosted payloads on commercial satellites can, and should be, a crucial element of each architecture because they offer proven economics based on shared spacecraft and launch costs, shorter cycle times with low schedule risks, and allow for regular and timely insertion of technology. A resilient architecture based on dispersed capabilities can be used to distribute vital resources and help preserve critical capabilities in the face of adversity."—**Rich Pang, Senior Director, Hosted Payloads, SES Government Solutions**

## CONTRACT FOR HOSTED PAYLOAD SOLUTIONS AWARDED BY SMC

By U.S.A.F. Space & Missile Systems Center Hosted Payloads Office



**O**ver the last five years, the U.S. Air Force Space Command's Space and Missile Systems Center (SMC) built the momentum to change the acquisition paradigm and is pursuing alternative ways to ensure space system resiliency and affordability.

A key catalyst for exploring this new paradigm was the Commercially Hosted Infrared Program (CHIRP) sensor, launched in September of 2011 as a hosted payload on an SES commercial communications satellite. According to Lieutenant General Sam Greaves, commander of SMC, "CHIRP proved the viability of commercially hosted OPIR payloads."



*Lt. General Sam Greaves, Commander,  
Space & Missile Systems Center.*

The CHIRP experience highlighted the utility of partnering with industry, spurring SMC to stand up the Hosted Payload Office in 2011. The Hosted Payloads Office is committed to assessing the utility of employing hosted payloads to provide resilient, affordable military space capabilities during a time of austere budgets. It is SMC's centralized office whose responsibility is to identify, match, and manage hosted payload opportunities and developments among Industry, U.S. Government, and international market participants.

SMC took a large step to alter the status quo for how the Department of Defense and other government agencies acquire space systems by awarding the Hosted Payload Solutions (HoPS) Contract on July 10, 2014. The HoPS contract is an Indefinite-Delivery-Indefinite-Quantity



*Artistic rendition of the SES-2 satellite on orbit,  
with CHIRP hosted payload aboard.  
Image is courtesy of Orbital Sciences.*

(IDIQ) contract that creates a pool of qualified vendors to fulfill the U.S. Government's need for various hosted payload missions.

The contract provides flexibility for procuring approximately six hosted payloads for a total value of up to \$494,900,000. The HoPS IDIQ contract procures fully-functioning on-orbit and ground systems services for government-furnished hosted payloads on commercial platforms. The contract also allows for hosted payload studies that may materialize into future missions.

Operationally, space mission concepts of operation and program transition timelines are key elements of any hosting arrangement. Hosted payloads must be tightly integrated with operational mission architectures, ensuring required capabilities are delivered. Ground infrastructures must make appropriate accommodations for the hosted payload data stream.

Considerations must be made for mission and information assurance, as well. Inserting commercially procured host satellites, commercially provided ground infrastructure for command and control and data dissemination, and commercially procured launch vehicles into these operational constructs spreads the costs of the entire system out to all the partners. Barring things such as specialized mission assurance or unique host satellite requirements, IDIQ government sensor customers can reasonably expect to pay the same price as any other commercially provided hosted payload.

In order to maximize hosting opportunities, the IDIQ contract synchronizes the Government Payload Office's procurement process with commercial satellite procurement lead times allowing industry



partners the chance to develop win-win business scenarios. In addition, the HoPS contract provides the flexibility to support early studies that enable payload design efforts and commit to flight processing later when the payload's schedule for commercial satellite processing is assured. The HoPS contract is designed to allow disparate payload and commercial satellite schedules to be synchronized enhancing hosted payload flight opportunities and reducing schedule risk for both the Government and the commercial host.

Companies competed to be included in two lanes: geosynchronous orbit (GEO) hosting opportunities and/or medium-earth orbit / low-earth orbit (MEO/LEO) hosting opportunities.

The 12 GEO lane vendors are:

- **Astrium Services Government, Inc.**
- **Eutelsat America Corp.**
- **Harris Corp. Government Communications Systems Business Unit**
- **Intelsat General Corp.**
- **Lockheed Martin Corp.**
- **Merging Excellence and Innovation Tech, Inc.**
- **Orbital Sciences Corp.**
- **SES Government Solutions**
- **Space Systems/Loral, LLC**
- **Surrey Satellite Technology**
- **The Boeing Co.**
- **Vivisat, LLC**

The eight MEO/LEO lane vendors are:

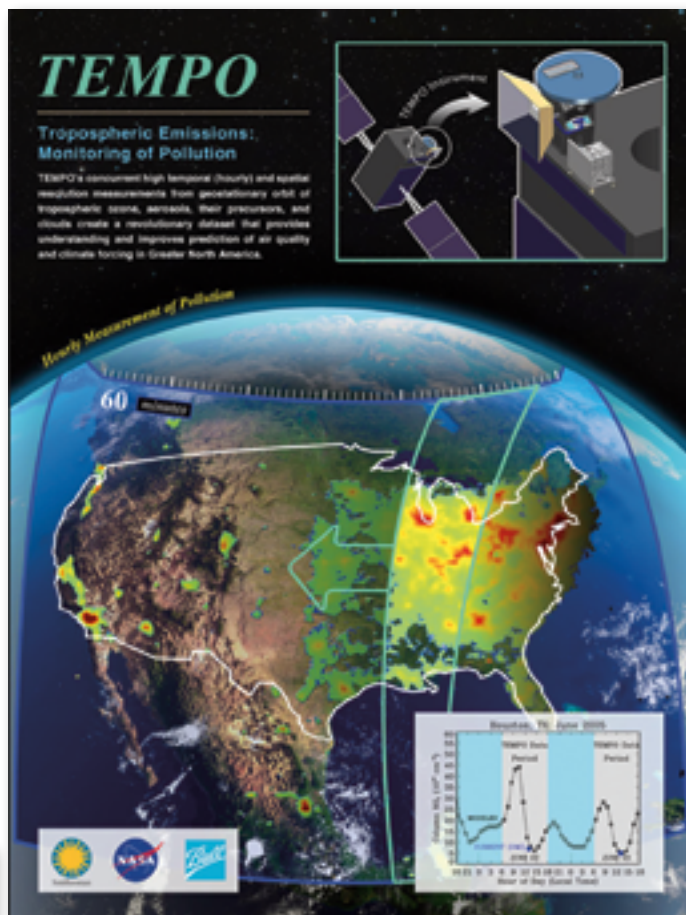
- **Astrium Services Government, Inc.**
- **Exoterra Resources**
- **Harris Corp. Government Communications Systems Business Unit**
- **Millennium Engineering & Integration Company**



SSL artistic rendition of the GEO satellite with a NASA hosted payload.

- **Orbital Sciences Corp.**
- **Space Systems/Loral, LLC**
- **Surrey Satellite Technology**
- **The Boeing Co.**

SMC further proved its commitment to leading the way for U.S. Government hosted payloads by awarding the IDIQ contract's first competitive mission study delivery order for the National Aeronautics and Space Administration's (NASA) Tropospheric Emissions: Monitoring of Pollution (TEMPO) mission.



The three GEO lane IDIQ partners selected to examine the feasibility of accommodating the TEMPO instrument as a hosted payload included:

- **Orbital Sciences Corp.**
- **Space Systems/Loral LLC**
- **The Boeing Co.**

Continuing its strong partnership with SMC, NASA is evaluating hosting the TEMPO payload on a commercially provided satellite leveraging the HoPS IDIQ contract. NASA has already released draft acquisition documents to the GEO lane partners asking for their feedback. The HoPS IDIQ contract award is a major milestone for the hosted payload community in achieving more affordable, disaggregated, and resilient space systems. SMC is excited to enter into this first-of-a-kind venture with our IDIQ partners.

## DISPATCHES

### SES GOVERNMENT SOLUTIONS (SES GS) + DISA—A WIN-T WIN



MRAP with WIN-T POP. Photo Credit: U.S. Army.

**SES Government Solutions (SES GS) has been awarded a contract to provide satellite capacity to support the Army Warfighter Information Network-Tactical (WIN-T).**

SES GS was awarded the five-year contract through Defense Information Systems Agency (DISA) as a subcontractor to small business company AIS Engineering, Inc. (AIS).

The innovative solution designed by the AIS and SES GS team is supported entirely by SES satellites. SES satellite capacity will provide support for U.S. Army research and development activities as well for testing new applications for mobile missions.

With more than three decades of experience serving the U.S. Government, SES GS has a long-standing relationship with the U.S. Army and has been supporting the WIN-T program for six years.

The SES GS infosite may be accessed at <http://www.ses-gs.com/>

Additional information regarding WIN-T may be gleaned at <http://peoc3t.army.mil/wint/>

### INTELSAT GENERAL CORPORATION + DRS TECHNOLOGIES—U.S. CENTRAL COMMAND SERVICES CONTINUE



**IntelSat General Corp. received a one-year contract renewal for satellite capacity from DRS Technologies, one of several previously referenced renewals that were received in the 2014 third quarter under the Future Commercial Satellite Communications Acquisition (FCSA) vehicle.**

Under the contract, entering its third year, IntelSat General is supplying satellite services to DRS Technologies, a division of Finmeccanica, in support of U.S. Central Command requirements in Afghanistan.



*Artistic rendition of the IntelSat 18 satellite, used to supply capacity to the armed forces during Iraqi Freedom.*

The service, which initially began in August 2012, is using 180MHz of Ku-band capacity on an IntelSat 9 series satellite over southwest Asia.

"Even though U.S. troops are being withdrawn from Afghanistan, the Pentagon will continue to provide support to Afghan forces," said Kay Sears, President of

IntelSat General. "Our satellite connectivity will continue to play a key role in that support."

"DRS and IntelSat General have teamed to support the Allied and Afghan forces with quality satellite capacity that provides connectivity for their critical communications missions," said Jim Scott, General Manager of Global Enterprise Solutions for DRS.

The IntelSat General infosite may be reached at <http://www.intelsatgeneral.com/>

Additional information regarding DRS Technologies may be found at <http://www.drs.com/>

Government customers of the benefits of hosted payloads and press for their inclusion early in the analysis of alternatives and architecture development processes. This allows for early and full integration of the hosted payload data into relative ground infrastructure and other needed linkages. This early planning is a small price to pay to take advantage of the cost savings, resilience, enhanced access to space and other benefits hosted payloads provide.”—**Myland E. Pride**, Director, Legislative and Government Affairs, **Intelsat General Corporation**



“While national policy encourages and enables the use of hosting, challenges still remain: government architectures for space capabilities do not yet include hosted payloads and concerns continue to be expressed about the priority commercial hosts will give to USG payload needs. Industry can help by developing approaches for government payloads which are hosted on commercial spacecraft to be readily integrated into existing government space systems—especially the associated communications and processing infrastructures on the ground. We can also help by inviting the government to “sit in” on some decisions about current satellites with hosted payloads aboard them; we can give them the opportunity to see how two or three partners balance their interests and concerns to arrive at a decision each partner agrees with.”—**Ed Spitler**, President, **Airbus DS Government SATCOM**



“The value of hosted payloads to both operators/owners and hosted payload sponsors has been proven with programs such as GPS WAAS and CHIRP. The challenge now is to make these deals more routine through innovative and integrated business, technical and operational solutions. For governments, both US and foreign, to take advantage of hosting, they must have payloads ready to integrate on the timelines of the host spacecraft and flexible contracting to act when flight opportunities occur. As a leading provider of government payloads and solutions, as well as commercial satellites, Lockheed Martin believes there are many untapped opportunities for commercial operators and government sponsors to enhance their business case and better satisfy mission needs through hosted payloads. Integration of the business, technical and operational solution will be a key enabler.”—**Mike Hamel**, Vice President and General Manager, **Lockheed Martin Commercial Space**



“The desire to reduce schedule and cost and the enabling technology is available today, but the U.S. Government is struggling to execute its current portfolio of programs of record. These programs, especially on the terminal end, are continuing to exceed cost and schedule estimates and any available funds to pursue new ideas are used to fund these shortfalls. If funds can be specifically budgeted to pursue augmentation of existing capabilities or development of new capabilities, innovative approaches can be demonstrated. New concepts often are not accepted until they are proven. One approach where industry may help is to make capital investments whereby the U.S. Government does not have to pay upfront but rather procures a service for a capability once it is on-orbit. Demand signals like letters of interest and/or commitment from the U.S. Government will go a long way in facilitating these efforts.”—**Rich Pang**, Senior Director of Hosted Payloads, **SES Government Solutions**



\*Source: “The Military’s Second Chance for a Bandwidth Fix,” Apr. 19 2013, Defense News

#### About the Hosted Payload Alliance

Established in 2011, The Hosted Payload Alliance (HPA) is a satellite industry alliance whose purpose is to increase awareness of the benefits of hosted government payloads on commercial satellites. The HPA seeks to bring together government and industry in an open dialogue to identify and promote the benefits of hosted payloads.



The HPA:

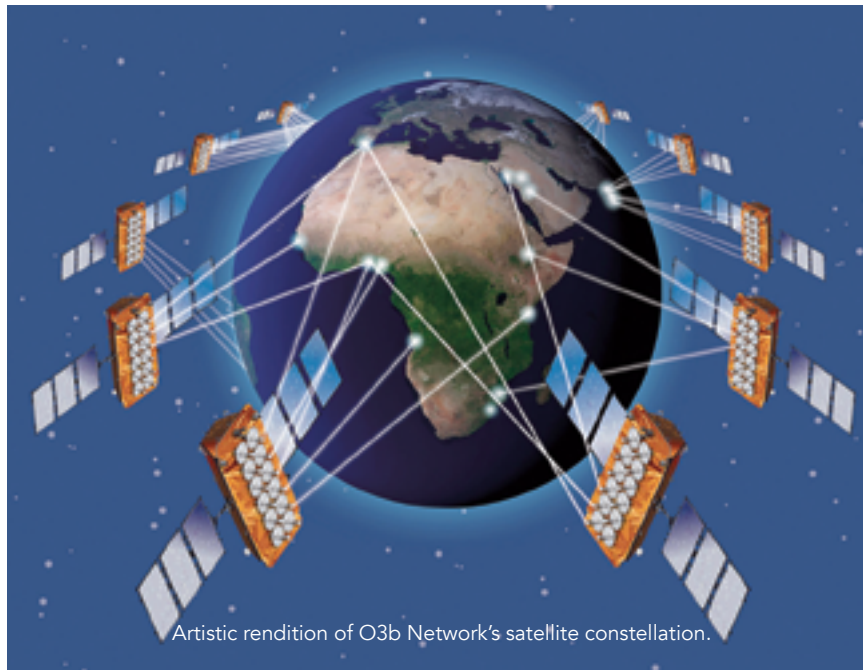
- » Serves as a bridge between government and private industry to foster open communication between potential users and providers of hosted payload capabilities
- » Builds awareness of the benefits to be realized from hosted payloads on commercial satellites
- » Provides a forum for discussions, ranging from policy to specific missions, related to acquisition and operation of hosted payloads
- » Acts as a source of subject-matter expertise to educate stakeholders in industry and government.

For additional details, please visit

<http://www.hostedpayloadalliance.org/>



### SES GS DEMOS O3B TECHNOLOGY FOR MAG PERSONNEL



Artistic rendition of O3b Network's satellite constellation.

**Global satellite solutions provider SES Government Solutions (SES GS) hosted a capabilities demonstration of the O3b satellite constellation for U.S. Government customers at MacDill Air Force Base in Tampa, Florida.**

Members of the armed forces witnessed the enhanced communications capabilities available to them through the new O3b satellite fleet, including increased information throughput and significantly reduced latency.

The satellite network, consisting of Medium Earth Orbit (MEO) satellites flying 5,009 miles above the Earth's surface, was able to backhaul and disseminate multiple channels of HD full motion video and simultaneously stream 4K real-time video at fiber-like speeds in a remote field of operations with no fiber infrastructure.

"O3b is a ground-breaking technology that will greatly enhance government capabilities. This is not just an incremental boost in network performance, but offers the potential to change the way users operate, providing communication

capabilities not previously available," said President and CEO of SES Government Solutions, Tip Osterthaler. "It gives the warfighter fiber-like connectivity on day one of operations."

The applications for this technology include backhaul and forward distribution of Intelligence, Surveillance and Reconnaissance (ISR) data, as well as enhanced, real-time command and control. O3b satellites can facilitate the immediate distribution of high resolution maps, weather data and other processed information for use by deployed forces.

Since O3b has fiber-like performance, it will allow deployed commands to optimize the current architecture of deployed communications networks, enabling them to leave latency-sensitive applications in the rear and lighten their IT infrastructure footprint with no loss of capability.

O3b also offers steerable spot beams which can be repointed on short notice or follow a moving asset. O3b system operations and narrow spot beams can

make communications difficult to intercept and jam, enhancing security for the government user.

By steering an O3b satellite beam to remote locations, customers can also acquire the superior performance, including lower cost per bit for higher throughputs, at locations specified by customers.

O3b's satellites include Ka-band coverage of +/-45 degrees over major world conflict hotspots, Latin America, Africa, Middle East, South and East Asia and the Pacific Ocean. SES GS was the first government distribution partner to include O3b on their General Services Administration (GSA) Schedule (as of June 30, 2014), making them the first distribution partner to offer O3b capability directly to the U.S. Government.

The equipment used at the demonstration is currently available on their GSA Schedule. Additionally, O3b products and capacity are available for purchase through the Future COMSATCOM Services Acquisition (FCSA) contract jointly administered by the U.S. General Services Administration (GSA) and the Defense Information Systems Agency (DISA).

The first four O3b satellites were launched in June 2013. The second four were launched in July 2014. With eight satellites on orbit, O3b declared it was ready for service on September 1, 2014.

On December 18, 2014, an additional four satellites are expected to launch and join the constellation, adding additional capacity and the ability to serve many more users.

The SES GS infosite may be accessed at <http://www.ses-gs.com/>

The O3b Networks infosite is available at <http://www.o3bnetworks.com/government>

## YEAR IN REVIEW: NORTHERN SKY RESEARCH (NSR)

By Carolyn Belle, Analyst



**W**ithin the diversity of space-based activities and services, the interplay between commercial industry and the government/military forms a collection of relationships and evolving roles. As we reach the end of 2014, communications services stands out as the most challenged of these commercial—government relationships and associated markets.

Many governments rely on commercial operators for communications capacity when they do not have access to, or have exceeded, proprietary supply. Except in cases when the state cannot be clearly delineated from commercial activities, commercial players do not use government space communications assets. Yet the communications market is far more inter-connected than this fact suggests: due to the high ARPUs and relative market size of government and military communications, commercial industry has an established reliance on government and military revenues. This reality has hardly been more apparent than in 2014. Indeed, this year many operators and service providers made public their lowered financial performance forecasts as a result of weak U.S. government SATCOM markets.

**Balancing Demand:** The government and military communications market is governed by an intricate array of supply and demand elements. Not only must two sources of supply be considered (MILSAT and COMSAT), but inconsistency in demand complicates hope for a stable market. NSR sees three primary factors impacting government/military COMSAT acquisitions:

1. *Sustained demand: The prioritization of remote communications capabilities, both in the scope of overall distribution of government spending and in military spending. This element controls the total amount and type of procurement.*
2. *Spiking demand: Geopolitical events that draw nations into conflict and/or assistance in distant regions of the globe.*
3. *Throttle: Government and military budgets related to the macroeconomic situation and internal policies.*

While the first factor remained strong in 2014, waning geopolitical drivers for capacity demand and generally worsening budgets hampered market performance. On balance, 2014 was a weak year for the government and military COMSATCOM market—the second year of decline in what is expected to be a multi-year slump.

**2014 Challenges:** First and foremost, the ongoing budget decrease—especially in the U.S., traditionally the largest COMSATCOM market—impacted the ability of government and military agencies to follow through on desired equipment and commercial capacity procurements. Commercial players fought to maintain profits in the resulting absence of few new programs or orders and more re-competition on previously

won contracts for existing programs. Further, the evolving move of satellite operators into sub-markets traditionally the niche of service providers heightened competition. Such an environment led to reductions in transponder pricing to win contracts, meaning tight and in some cases negative margins. Over the 2013-2014 period, workforce reductions and restructuring were implemented as a means of countering the impact of such revenue declines on the bottom line.

Meanwhile, the U.S. government's ability to address their own demand with proprietary satellites rose: MUOS-2, AEHF-3, WGS-5, and WGS-6 were all launched in 2013, coming into general use in 2014. Space segment additions extended to Europe in 2014, with the launch of Italian-French Athena-Fidus and Sicral 2/Syracuse III c satellites. Given the perception of proprietary satellites as providing "paid-for" capacity, and in the context of limited budgets, the pressure to prioritize use of such assets and turn to commercial capacity only as a secondary source increased. Especially as compatible terminals are fielded and remaining WGS satellites are launched, NSR sees this as a consistently growing dynamic over the next 5 years.

The continued withdrawal of U.S. and NATO forces from Afghanistan directly reduced demand for capacity in the Middle East with an associated negative impact on commercial players. Yet just as U.S. and NATO engagement in Iraq and Afghanistan spiked demand for COMSATCOM in the early 2000s, the eventual withdrawal of such forces and a corresponding drop in demand was anticipated. While maintenance of foreign presence through the September 2014 Bilateral Security Agreement will generate enduring demand over the next couple years, it will not be more than a fraction of the peak demand seen in 2011 and 2012.

**2014 Successes:** The most notable successes in 2014 have been a willingness to leverage advancements in technology and growing acceptance of varied commercial roles in the formation of diversified space architectures.

The extension of high bandwidth services to lower levels of command (company level in addition to brigades and battalions) opened the door to new sources of equipment and service demand. Complemented by the establishment of new programs of record such as the U.S. Transportable Tactical Command Communications, and the ongoing fielding of smaller on-the-pause terminals (e.g. SNAP-Lite) and on-the-move terminals, this reaffirmed the importance of SATCOM connectivity in tactical military operations.



Long awaited services debuted with government and military user tests in 2014, including Ka-band GEO-HTS through Inmarsat-5/ Global Xpress and MEO-HTS through O3b. The appearance and expanded availability of new products, including Wi-Fi hotspot devices from multiple MSS operators and L-TAC from Inmarsat, has broadened the utility of satellite services for military, civil government, and NGO markets.

Industry has long advocated for an extension of leasing periods to beyond one year in duration, and the June 2014 award of the first multi-year U.S. Air Force Pathfinder contract to SES Government Solutions heralded preliminary results. While questions regarding the utility of the inclined Ku-band capacity leased for regional military users remain, an RFP for a second Pathfinder contract was announced several days later. The pace at which this, and the future 4, Pathfinder contracts are awarded and implemented will determine the true impact of this program on the procurement process as a whole.

The associated hope and concern of disaggregation remained an industry buzzword in 2014. The July 2014 Hosted Payload Solution (HoPS) contracts signaled a willingness to explore potential mission advantages and cost savings through a streamlined approach. U.S. and foreign militaries also continued to experiment with nano satellites as communications platforms to complement existing assets. Nonetheless, and while such actions are positive, sweeping changes to the current space architecture and mode of operation will be complicated and time-intensive to implement – in essence, unlikely to impact the market materially in the near-term.

**2015 Expectations:** NSR believes that 2015 will not be a significant or watershed year in the COMSATCOM market. The restraints of 2014 will continue nearly unabated. The impact of ongoing budget restrictions will be amplified by further launches of military satellites and associated leaps in available proprietary capacity. Far fewer troops will be actively deployed in Afghanistan in 2015, though emerging hostilities against Islamic State/ISIS and potential for escalating conflict in Eastern Europe could augment demand; as a commercial capacity play, the associated use of UAV and manned aeronautical platforms in such arenas will drive demand to commercial operators.

Ka-band GEO-HTS and MEO-HTS services are expected to progress to operational use following testing.

In 2015 and beyond, the market will experience a rising focus on applications and services—ISR, VoIP, and video conferencing—as well as mobility. While these areas are not anticipated to cultivate market growth in 2015, the ongoing development of demand and diversification of available solutions will provide a foundation for market upswing in 2016.

**Uncertainty Lingers:** Given the series of key demand variables identified above, it is critical to consider the government and military SATCOM market through the lens of several possible futures. Potential for a shifting political balance in key countries, emergence of unexpected geopolitical crises, and still fluctuating budgetary levels could all impact the amount and distribution of overall SATCOM procurement worldwide.

Will NATO engage in a third ground-based military intervention in the Middle East, with a consequential demand for surge capacity? Might the 2016 U.S. election raise the Republican Party to Executive and Legislative power, bringing with it a stronger focus on defense-related spending? Or, could U.S. sequestration worsen and force even deeper spending reductions than expected?

Following the 2013-2014 declines, the government and military satellite communications market is approaching a crossroad. The many factors at play in the kinds and amounts of commercial SATCOM procurement could go in several of many directions, reinforcing NSR's belief that the state of this market is far less certain than many commercial players might like.

**Bottom Line:** Overall, 2014 was a down year for the government and military commercial satellite communications market and an exacerbation of the negative trend noted in 2013. While the government and military appetite for remote communications capabilities is not expected to decline moving forward, financial resources to procure such capacity are lacking in the near-term. As government budgets increase, new services are adopted, and methods of procurement are modernized to increase efficiencies, there is more hope that the government and military SATCOM market will return to growth.

*Ms. Belle joined NSR as an analyst with several years of experience in the space industry, ranging from atmospheric chemistry to education outreach and market research. Her main focus is satellite manufacturing and launch markets, and in particular the trends surrounding creation of diversified space architectures. She also contributes to research in government and military communications markets in addition to participating in the diverse tailored consulting projects undertaken at NSR.*

*Ms. Belle comes to NSR from the Research and Analysis team at the Space Foundation, where her research efforts primarily addressed new and emerging space products and services as well as the policy considerations and efficacy of international space endeavors such as the International Space Station. Ms. Belle received a Master's degree in Space Management from the International Space University.*



## COMMAND CENTER: PETER F. HOENE, PRESIDENT & CEO, SES GOVERNMENT SOLUTIONS

## SPECIAL GUEST APPEARANCE: TIP OSTERTHALER, FORMER PRESIDENT & CEO, SES GOVERNMENT SOLUTIONS

**B**rigadier General Peter Hoene, (Retired) was named President and CEO of SES Government Solutions on Jan 19, 2015. In his previous role, he served as the Corporate Vice President for Development for SES Government Solutions, headquartered in Reston, Virginia.

As Corporate Vice President for Development, he worked with United States warfighters and other government users to help determine their requirements and offer communications support, hosted payload opportunities, and network solutions. He then communicated those requirements to the SES parent organization to take advantage of existing on-orbit SES fleet capacity, or to influence future satellite designs.



**R**obert Tipton (Tip) Osterthaler joined SES in 2006 when he became the President and CEO of AMERICOM Government Services. Since then, the wholly-owned subsidiary of SES SA has grown and integrated with other government focused elements within SES to become SES Government Solutions (SES GS).



During his tenure at SES, the U.S. Government business has been transformed from a primarily indirect sales channel into a solutions-focused independent subsidiary responsible for all aspects of SES's U.S. Government business. Under his leadership, SES Government Solutions transitioned into a Proxy Corporation structure, allowing the company to broaden its business base to include a wider range of customers and technologies.



*Artistic rendition of the upcoming SES-16 / GovSat satellite, which will be built by Orbital ATK. Image is courtesy of Orbital ATK.*



Hoene retired from the U.S. Air Force in 2010 as Brigadier General, following 30 years of service. He is a graduate of the U.S. Air Force Academy, as well as a distinguished graduate of both the Air Command and Staff College and the National War College. He holds two masters degrees and served in a wide variety of Space, Command and Control, and research, development, acquisition, test, staff and command assignments.

In his last active duty position, Hoene served as the Defense Information Systems Agency (DISA) Program Executive Officer for Command and Control, where he managed a portfolio of Joint and Coalition Command and Control and Information Sharing programs. Prior to his DISA assignment, he was Commander, 350th Electronic Systems Wing (C2&ISR Wing), Electronic Systems Center, Hanscom Air Force Base, Massachusetts, where he managed a portfolio of 49 command and control (C2), ISR, Space and Cyber programs valued at more than \$9 billion.

### **MilsatMagazine**

*Mr. Hoene, what initially prompted you to serve in the U.S.A.F., and how did you move into the space, ISR and C2 environs?*

### **Peter Hoene**

I was a senior in high school playing in the Minnesota State Ice Hockey Tournament. One of the Air Force Academy hockey coaches was there and

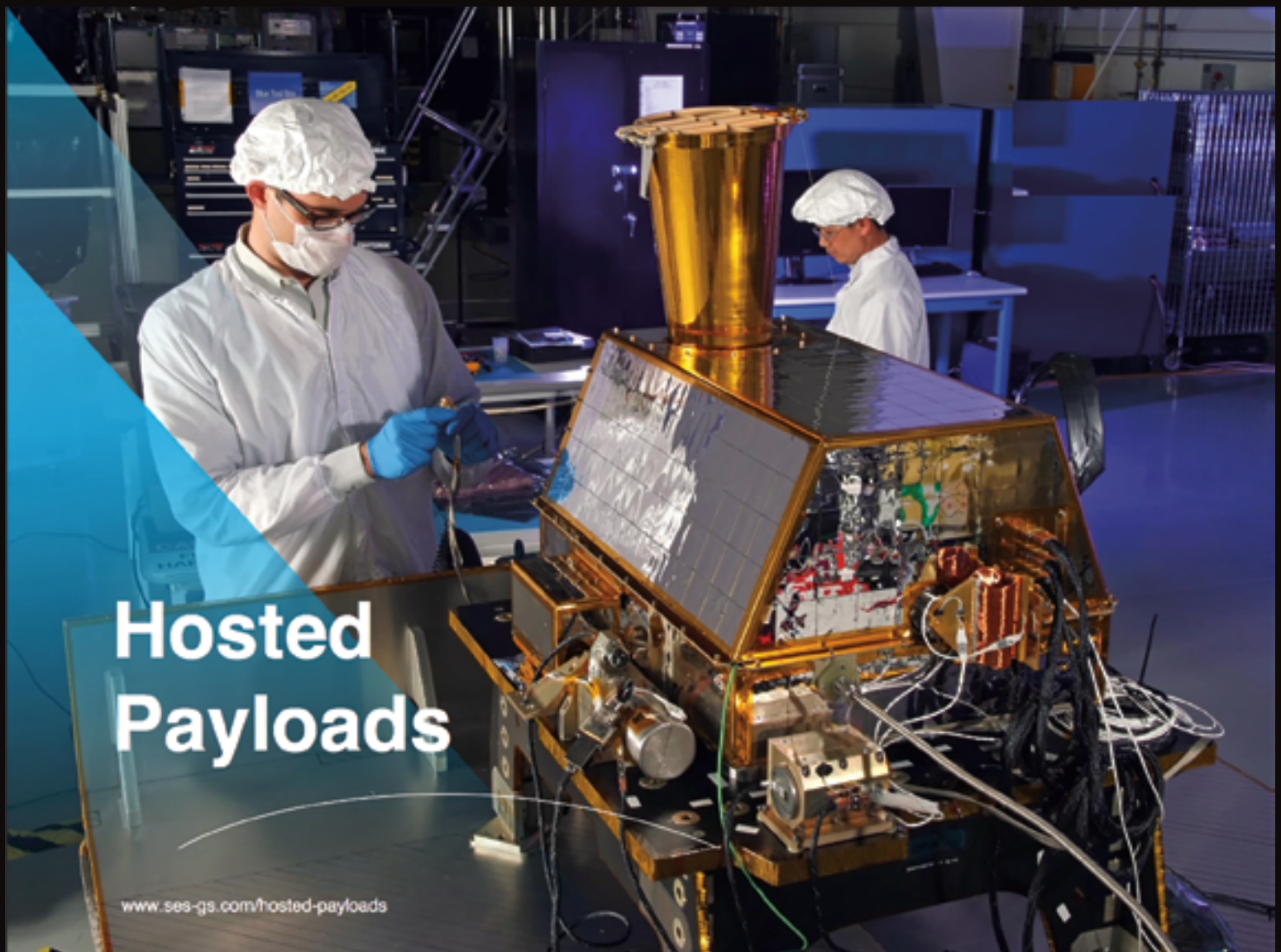
From 1997 until 2006, Tip was a Senior Vice President at Science Applications International Corporation (SAIC) where he led an international security organization within the Strategies Group. Prior to joining SAIC, Tip served in the U.S. Air Force for 28 years, retiring as a Brigadier General and Deputy Assistant Secretary of Defense for European and NATO Policy. Earlier positions included Vice Commander of the Air Intelligence Agency and numerous command and senior staff assignments.

Mr. Osterthaler is a Command Pilot with over 3,200 hours of flying time in fighter aircraft including multiple models of the F-15 Eagle.

Tip holds a BS in Economics from the U.S. Air Force Academy and an MBA from Texas A&M University. He is also a graduate of Harvard University's Senior Executives in National Security and National and International Security Management programs, the Royal College of Defence Studies in the United Kingdom, the Air War College, and the Marine Corps Command and Staff College.

### **MilsatMagazine**

*First, we certainly do wish you and yours a most rewarding retirement and we thank you for your past service to our nation. You have definitely witnessed numerous changes in MILSATCOM through your experience as a Brigadier General, in the U.S.A.F. and also during your leadership role at SES GS—how has SES GS grown since you joined the company in 2006 as President and CEO?*







recruited me. While pretty late in the process for a Service Academy, I liked what I heard from the coach. Additionally, I was fortunate to have good grades, have the coach recruit me for hockey, and to receive an appointment.

This was a fantastic opportunity for me to attend a very prestigious school, play Division I hockey, and serve the nation in the Armed Forces. After four years at the Air Force Academy, I graduated and was commissioned as a second lieutenant in the U.S.A.F. My first assignment was to the Air Force's Space Division in El Segundo, California. I served in five different jobs in five years in space related activities, each with increasing responsibility.

These early assignments taught me a lot as I had the opportunity to work with extraordinarily competent Airmen, government civilians, and industry partners. I also met a number of mentors who helped guide and shape my professional development. This was a great start to a 30-year Air Force career.

The C2 and ISR efforts were much later in my career (at the 20 year point when I was a Colonel). I was busy as the Deputy Program Director for the GPS program in Los Angeles and I was selected to lead a new experimental effort at Langley AFB, Virginia, called Combined Air Operations Center—Experimental (CAOC-X) for General Jumper and General Lyles. This effort combined users, developers, and testers to short-circuit the often lengthy acquisition process and rapidly assess and field new capabilities for Air Operations Centers (AOCs) worldwide.

We were successful as a team and fielded the first "Block 10" AOC at Prince Sultan Air Base, Saudi Arabia, a year later. Ironically, we declared Final Operational Capability at the end of August, 2001. Two weeks later, after the 9-11-01 attacks, this AOC became the "nerve center" for all C2 and ISR for air operations supporting Operation Enduring Freedom over Afghanistan and later Operation Iraqi Freedom over Iraq.



**The Coalition Compound at Prince Sultan Air Base in Saudi Arabia.**

### **MilsatMagazine**

*What drew you to join SES Government Services (SES GS) as the company's Vice President of Development in 2011?*

#### **Peter Hoene**

First and foremost, I was drawn to the company due to the reputation of Tip Osterthaler. I was impressed by Tip's vision for the company and the quality of the company's leadership team. I was also interested in SES GS as a company that would allow me to work in the space business from the commercial side while also allowing me to continue to serve Army, Navy, Air Force, Marine Corps, and other U.S. Government customers. Additionally,

### **Tip Osterthaler**

When I joined SES in late 2006, the company was a conglomerate consisting of three satellite companies: Astra in Europe, Americom in the U.S., and New Skies Satellites operating globally.

In 2015, SES operates as a single global enterprise and has become the largest owner operator in the world by revenue and by number of satellites. As that transition has taken place, U.S. Government business has been consolidated under SES Government Solutions, which now is approximately three times as large in terms of both people and revenue as it was in 2006.

### **MilsatMagazine**

*What would you say is your biggest accomplishment during your time at SES GS?*

### **Tip Osterthaler**

The evolution of Americom Government Services into SES Government Solutions has created a satellite communications solutions company that is sharply focused on the needs of its U.S. Government users. While this might not seem unique or important, the industry in general, and SES in particular, have traditionally been focused more on the needs of commercial than government customers. I have worked hard to help SES understand and appreciate the benefits of doing business with the U.S. Government, and I have also, together with many of my colleagues in the industry, worked hard to help our government users better understand and appreciate what the industry can do for them. This work will never be completely finished, but I am proud to have played a part in creating a stronger and sustainable relationship between the government and SES as well as the other owner operators.

### **MilsatMagazine**

*The missions for private industry and the militaries within MILSATCOM have been fewer over the past several months, thanks to budget slicing by those not in-the-know—these monetary cutbacks have been crippling too many companies and military organizations. Is there any remediation you can see in regard to these cutbacks? What can private industry accomplish to mitigate such debilitating assaults to ensure the continued technical leadership and military prowess of our nation and those of our allies?*

### **Tip Osterthaler**

The wind down of operations in the Middle East and Southwest Asia, reinforced by a cyclical downturn in defense spending, has indeed put a lot of pressure on companies like SES and on the government organizations they support. It's my personal view that a healthy long-term national security posture requires both a strong economy and a broad political consensus about the where defense spending sits on the list of national priorities.

The economic crisis that precipitated the original defense downturn and eventually the Budget Control Act of 2011 has largely passed, but the political disagreement about priorities has not. In fact, the Budget Control Act has created a zero-sum game between defense advocates and supporters of other spending priorities, and the rules of the game are irrational and damaging to the interests of both sides as well as to the nation.

Unfortunately, there seems to be no near-term alternative, so I expect our U.S. Government customers, and we, will continue to feel some level of pain while a new political bargain is hammered out. From an industry perspective, we need to be both patient and persistent in trying to help the government get the capabilities it needs now and in the future, even in the face of fierce resistance to change from some of the people we are trying to help.





I was most impressed with the parent company as a whole and their high standard of professionalism.

### **MilsatMagazine**

*To move from a position of command responsibility for the acquisition and distribution of technology from private industry, to one of moving innovative products and technologies to acquisition agencies and force command structures must have been somewhat challenging. Please describe your transition from that of a Brigadier General in the U.S.A.F. to that of private industry. What were the most challenging issues you faced?*

### **Peter Hoene**

During my time on active duty, we had a clear mission focus. My team and I were able to support our warfighters in innovative ways to respond and adapt to the emerging threats posed by well-defined enemies and less well-defined terrorist organizations.

As I transitioned to industry, I met some great people, with great ideas, who wanted to help our warfighters but were constrained by: 1) U.S. Government contracting strategies that weren't flexible enough and don't allow for partnerships with industry; 2) bureaucratic decisions that cut funding for the programs we supported but we believed were vital to our warfighters; and 3) a perception that some government personnel have that "U.S. Government contractors are motivated by profit only."

While our company needs to make a profit to remain in business, we are also committed to ensuring the correct end result for our U.S. Government customers. In fact, SES GS has provided significant support to efforts, such as the U.S. Air Force CHIRP hosted payload and major networks on a fixed price basis. Every day, our people work above and beyond what's required by the contract because we want to exceed our customer's expectations and ensure their missions are successfully accomplished.

The three points above represent challenges for industry, which is governed by the ability to get things done, deliver on revenue commitments and meet profit and loss objectives. I've found that these key areas for industry are not always considered by our U.S. government counterparts and raising their awareness to help us better partner and meet their needs is extremely important.

### **MilsatMagazine**

*Can you tell us about some of your greatest accomplishments as Program Executive Officer for Command and Control at DISA?*

### **Peter Hoene**

The single biggest success we made was to move expensive, rigid, and tightly coupled applications to a much more flexible and affordable Service Oriented Architecture (SOA—an Architecture built around re-usable and exposable services). Great examples of this were the Global Command and Control System—Joint, and Global Combat Support System—Joint. Both of these programs made major progress by exposing data previously unavailable to enterprise users and to make the migration we initiated with the Joint Program "Net Enable Command and Control (NECC)." While NECC was eventually canceled, this project paved the way for an entire generation of SOA and Net-Enabled capabilities, which have made our DoD IT-based infrastructure more efficient and effective for our warfighters and more affordable.

### **MilsatMagazine**

*What does SES GS have in store for the future under Pete Hoene's leadership?*

### **Tip Osterthaler**

This is a question you should ask Pete, and I hope you will. What I will say is that Pete is an accomplished executive with an extremely strong background in both government and the satellite industry. We undertook a rigorous search and could find no one with his combination of skills and experience; at the end of the process, the members of the search committee, the Board members, and the shareholder representatives unanimously agreed that Pete is the person to take SES Government Solutions into the future, and I expect he will be so successful as to make everyone quickly forget my name.

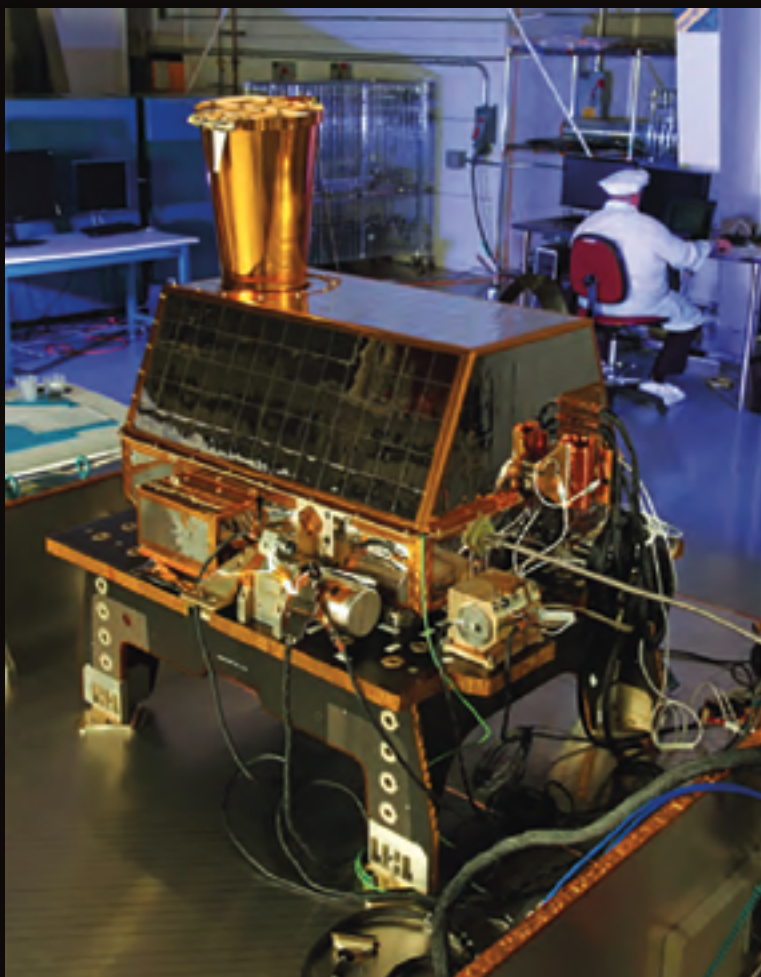
### **MilsatMagazine**

*If you would care to let our readers know, what are your short term plans for some R&R? Will we see Mr. Osterthaler once again involved in the industry at some point in the future?*

### **Tip Osterthaler**

When I made my decision to retire, I deliberately decided I would make no professional plans or commitments until the transition is completed, and that does not happen until March.

I very much look forward to having unstructured time, fewer travel requirements, and less pressure, and I certainly will not jump right back into any full-time commitments. Some future involvement within the industry is certainly not out of the question.



## **MilsatMagazine**

*How would you describe your management style during your command career in the United States Air Force (U.S.A.F.) as opposed to that of private industry?*

### **Peter Hoene**

*I grew up playing team sports, including ice hockey, football, and baseball. I learned we won and lost as a team and that shaped my future leadership style. As a result, I became a highly participative leader and manager.*

*I like to roll up my sleeves and lead teams to solve problems and make things happen. Additionally, during my time in the Air Force, I happened to work for some great leaders and learned from them that if you communicate effectively, focus on satisfying your customers (internal and external), lead by example, and work together as a team, anything is possible.*

*I also learned to surround myself with the best and brightest people, delegate to them, and see how creative they can be when you unleash their potential. Finally, I've learned that the same style I used in the Air Force has also served me well in private industry—the style is based on solid leadership principles and those apply equally, no matter if for the military or for private industry.*

## **MilsatMagazine**

*How will you ensure our militaries and those of our Allies are made aware of SES GS solutions, especially during budget-restrictive times?*

### **Peter Hoene**

In 2013, SES GS sat down with industry leaders and created a message for Congress and the Pentagon entitled "Seven Ways to Make the DoD a Better Buyer of Commercial SATCOM." Our task was to show how SES GS capabilities complement these "seven ways."

This is possible through our fleet and end-to-end solutions as well as with the help of our industry allies. We engage with our customers on-site in the U.S. and around the world—working closely to ensure we understand their demands.

We're constantly providing innovative solutions to address their needs and work diligently within their budgetary restrictions. Industry associations as well as publications, such as *MilsatMagazine*, allow for us to reach a narrowly targeted audience and ensure governments around the world are made aware of the type of solutions we offer.

## **MilsatMagazine**

*May we have your thoughts regarding the viability of Hosted Payloads? As the company is a member of the Hosted Payload Alliance, how will you continue to promote such cost-saving functionality for the military and government agencies? Are there any near-future plans by SES GS to work on another hosted payload mission?*

### **Peter Hoene**

We are the proud hosts for the CHIRP program and it is a prime example of the viability of Hosted Payloads. We were able to structure a contract in weeks and launch the satellite and CHIRP hosted payload in approximately three years from the time we received the contract award.

Senior Air Force leaders, including the SecAF and Commander of Air Force Space Command have praised the responsiveness of SES GS and the performance of CHIRP. In fact, we were able to accomplish 85 percent of the Air Force's mission objectives at about 15 percent of the cost such would have taken to build and launch a dedicated satellite. The payload



**CHIRP installation within fairing.**

was even granted a two-year extension by the U.S. Air Force Space as it was able to exceed its estimated life expectancy after being placed into operations on orbit.

As a member of the Hosted Payload Alliance, we will continue to engage directly with the government through meetings, workshops and panels to promote how hosted payloads provide consistent, dependable and affordable access to space.

SES GS is one of 14 awardees granted a share of a contract worth in total a maximum of \$494,900,000 under the Hosted Payload Solutions (HoPS) Program. This indefinite-delivery/indefinite-quantity (ID/IQ) contract will provide a streamlined method for the U.S. Government to host government payloads on SES spacecraft.

## **MilsatMagazine**

*Additional areas of consideration for the SATCOM world revolve around High Throughput Satellites (HTS) and SmallSats, certainly contradictory in terms of size. What do you foresee as the acceptance, and use of, these technologies within the MILSATCOM communities?*

### **Peter Hoene**

The MILSATCOM community can sometimes be a catalyst for change, but often the commercial industry frequently becomes the trend setter and advancer of new concepts and ideas. When WGS was first conceived with its 5 to 8 Gbps, it was a High Throughput Satellite (HTS) compared to other satellites operating in the MILSATCOM and commercial arena.



**SES Government Solutions hosted the first ever experimental U.S. Air Force sensor on an SES satellite operating over the United States. CHIRP (Commercially Hosted Infrared Payload) was successfully launched on September 21, 2011 from Kourou, French Guiana. The CHIRP flight demonstration program tested a new type of infrared sensor from geosynchronous orbit. This sensor has been integrated onto a commercial satellite and the data it receives is transmitted to a ground station for analysis.**

*Photo is courtesy of Ronan Liétar*

Now HTS satellites frequently exceed 40 Gbps and some cross the 100 Gbps capacity line. The MILSATCOM community will need to adjust its CONOPS and, in some cases, the hardware to take advantage of these new systems. Older modems and network designs that require all of the users to be in the same coverage beam can't take advantage of the new HTS capabilities and need to be updated.

HTS satellites achieve their efficiency through one primary concept—use tens to hundreds of smaller, more powerful beams to cover the same area previously covered with a single beam. The biggest driver that will move the MILSATCOM community from monolithic large beams to HTS capacities is the price per Megabit. HTS satellites will provide capacity at rates below \$1,000/Mbps while traditional satellites are in the \$2,500 to \$6,500/Mbps range. The second driver is the dramatic increase in throughput per user. A typical ISR UAV will consume 10 MHz of typical GEO satellite capacity to transmit an HD video feed. This same HD video feed will consume approximately 2 to 3 MHz on a GEO HTS satellite. Many of the new HTS satellites being built today are purposely designed with overlapping traditional wide beam and HTS coverage areas to reduce transition risk and facilitate uptake on the HTS capacity.

Likewise, many of the ground systems (teleports) currently supporting traditional Geostationary capabilities are being enhanced to support HTS. The DoD uses many of these facilities today. All security elements of the ground systems and the existing DoD network injection points will continue in operation further reducing DoD's cost and risk of migrating to HTS.

Current DoD maritime platforms and commercial aviation platforms already support basic frequency agility to allow the use to transition from one GEO satellite to another. Unfortunately this isn't the case for many of the ISR UAVs in service today. In order to take advantage of the HTS capability, these older, outdated modems will require upgrades. The good news is that the commercial In-Flight Entertainment business is driving the technology evolution in this area and the MILSATCOM community will reap the benefits of this new capability.

Terminal, hardware, and network changes required to exploit the cost/performance benefits of HTS are already in operation and there are more to come.

### **MilsatMagazine**

*Additionally, airborne intelligence, surveillance and reconnaissance (AISR) and steerable spot beams are also under the MILSATCOM spotlight. How will you ensure SES GS be able to address these needs?*

#### **Peter Hoene**

SES GS has partnered with O3b networks to provide high throughput satellite capabilities (1.2 Gbps per spot beam) with fiber-like speeds. The lower cost per Megabit creates a lower cost while steerable beams offer flexibility in terms of coverage area.

O3b products and services are currently listed on our GSA Schedule 70 and are also available via the Future COMSATCOM Services Acquisition (FCSA) contract initiative with GSA and DISA. SES GS will continue to meet directly with the U.S. Government to showcase O3b capabilities.

### **MilsatMagazine**

*How do you believe your 30 years of experience with the U.S.A.F. will impact your new role as the leader of SES GS?*

#### **Peter Hoene**

As I mentioned earlier, I am a very participative leader and manager and like to roll my sleeves up and lead teams to solve problems and make things happen.

I will leverage the leadership principles I learned and employed in the USAF and in industry for my new role. Further, I intend to establish a clear vision for the organization, get my senior leadership to buy in and tailor their goals and objectives to that vision and strategy, and turn them loose and unleash their team's human potential to make our organization successful. Some of the key elements of that approach will be to:

- » Provide a strong customer focus and look at the challenges we face from a customer perspective. Having been on the other side of the table, looking at things from the U.S. Government perspective is critical to providing the solutions we need.
- » Provide the leadership needed to get the organization aligned and properly staffed.
- » Retain, recruit and promote the best people.
- » Create an environment of trust and teamwork, and reward innovative solutions.
- » Deliver on our promises to our customers and to our parent company.





## MilsatMagazine

*Now that you lead SES GS as the President and CEO, what is one of your toughest company challenges that you have had to face?*

### Peter Hoene

Meeting our revenue targets in an era of U.S. Government budget reductions driven by the 2011 Budget Control Act, Sequestration, and other related budget cuts, is certainly a crucial challenge to face and overcome.

Additionally, we need our U.S. Government counterparts to help by providing insight into the evolving National Security Strategy map and help identify “demand signals” for different regions of the world. These demand signals can help us work with our parent company to identify potential orbital slots and spectrum needed well in advance of future conflicts. Without this insight, we may be faced with a situation where the U.S. government needs capacity (e.g. over the Pacific), but there is not sufficient capacity, nor are there slots and spectrum to offer in support of contingencies.

Unless the DoD employs alternative funding strategies for leasing or purchasing commercial satellite capacity, they are likely to continue to purchase capacity on the spot-market. This approach is costly for the taxpayer and dangerous, as the U.S. Government will not have established partnerships with industry to ensure they will have the global commercial SATCOM capacity when and where they need it. The demand signals mentioned above and partnerships with industry will go a long way to ensuring companies like SES will invest in long-term satellite fleet development to meet U.S. Government needs. Currently, the U.S. Navy is the only service with an enduring Program Objectives Memorandum (POM) line for commercial SATCOM (through the CBSP program).

## MilsatMagazine

*As you look at 2015, considering your breadth of experience, what situations do you believe will be of the most importance for our industry to deal with—challenges that absolutely demand the best from companies within MILSATCOM to offset those who have intent to harm and destroy?*

### Peter Hoene

From a national security perspective, we believe the U.S. Government should consider Commercial SATCOM as an integral part of any of their future solutions. A great start to this would be the U.S. Government to establish a SATCOM architecture team to examine how Commercial SATCOM and MILSATCOM complement one another and use this effort to perform tradeoffs between the two.

Such a team approach could also help provide the underpinning to ensure commercial solutions are addressed for future Analysis of Alternatives for the follow on to WGS and other systems. We’ve heard some great ideas from Air Force Space Command and Congressional leaders along these lines and would like to see them put into practice.

Using this architectural framework as a backdrop, the U.S. Government can work with the owner-operators to develop innovative hosting, leasing and acquisition models to help meet their mission needs in a much more affordable and efficient manner.

Commercial SATCOM owner operators can be very responsive to emerging needs and can deliver on orbit solutions in a very timely manner. Further, if the U.S. Government wants enhanced security features and can articulate these to industry, we will do our best to include their requirements, investigate alternative means to acquire service, and ensure efficient usage in what they buy.

The Pathfinder program is a model of how the industry could meet those challenges in the future. We’re encouraged by the innovation we’ve seen from the Air Force in the Pathfinder concepts and are proud to be the industry leader for Pathfinder #1. This allowed the DoD to pre-commit to the use of satellite transponders for multiple years and lower the cost, compared to the traditional O&M leasing approach.

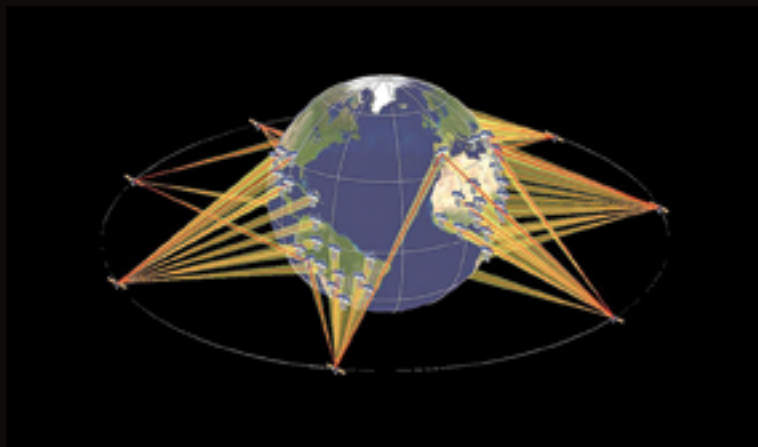
I believe we’ve made great strides on Capitol Hill, the Pentagon as well as alongside our COMSATCOM partners. We’re definitely moving more towards a streamlined satellite acquisition process but there is still much more work to be done.

When it comes to the industry as a whole—one of the ideas that Tip Osterthaler presented at SIA’s DoD SATCOM Workshop in 2014 was the idea of a proprietary SATCOM supply database. This way, the DoD knows where future capacity will be available. Meanwhile, the industry can provide more accurate business cases for future satellites to fill the gap in demand. Further, creating a tangible solution like this would demand the absolute best from companies in the MILSATCOM arena.

In terms of procurement, the DoD is looking to better understand our Commercial SATCOM capabilities. We are working with DoD end-users side-by-side to help them not only solve their problems today, but understand how to leverage all of the capabilities and potential that COMSATCOM can bring to provide even more capabilities, at affordable prices.

In summary, we understand how important the mission of our warfighters is. We are honored to support many of the DoD and other U.S. Government agencies’ most important networks and initiatives. I personally take pride when I see how the staff at SES GS comes to work every day, rolls up their sleeves, and applies their full talents and creativity to try to solve critical challenges facing our warfighters and other customers worldwide.

The SES GS infosite: [www.ses-gs.com/](http://www.ses-gs.com/)



**Artistic rendition of the O3b Network's constellation.**

# HPA CORNER: NEW AND ADVANCED TECHNOLOGIES

By Amy Akmal, Communications, Space Systems, Northrop Grumman

**A**s leaders from government agencies determine how best to develop a future space architecture, one thing is certain: Advances in technology will help drive a new approach to space.

Exciting leaps in space-based technologies present new ways of looking at issues to deliver affordable and secure solutions—with evolving technology behind hosted payloads leading us to a more efficient and smarter future.

The rigors of launch and a complex space environment requires long-term performance for critical missions and demands thoughtful refinement to adapt ground components for space use.

The good news is that technological breakthroughs in industry are enabling unprecedented progress to reduce cost, shorten delivery schedules and deliver high performance capabilities.

This column's question for HPA Members is...

**From your perspective, as members of the Hosted Payload Alliance, what new/advanced technologies are you excited about?**

"Important considerations when adding a hosted payload are power, weight and physical size. The more hosted payloads require from the host satellite, the fewer the available resources for the primary payloads. Boeing is interested in technologies that make hosted payloads more weight- and power-efficient. Gallium Nitride (GaN)-based products such as Solid State Power Amplifiers (SSPAs) and Low Noise Amplifiers (LNAs) can reduce footprints for many hosted payloads. Another relatively mature technology is a Field Programmable Gate Array (FPGA). FPGAs can be leveraged to provide fast turn digital solutions necessary for hosted payloads, and enable the customization of processors necessary to implement complex solutions within the tight schedule constraints of a commercial satellite acquisition. Separately, Boeing also has an interest in exportable encryption developments that will support payloads of national importance as hosted payloads are integrated or launched on a more diverse set of satellites and launch vehicles."—**Jim Mitchell**, Vice President, **Boeing Commercial Satellite Services**



"We think that hosted payloads will play a key role in the development of multiple new technologies. A great example of that is our work with NASA on the laser communications relay demonstration (LCRD). As the payload and ground system are being developed we are working on the interfaces so that the demonstration can meet the requirements of a commercial schedule. Optical communications use an uncongested portion of spectrum compared to the radio frequency (RF) communications



generally used to transmit data from space. We think laser communications has great potential to provide order of magnitude higher data rates than RF for point-to-point communications, to enable access to much more of the vast amounts of data that are being gathered from distant planets, including images and video. For commercial satellites, laser communications could provide data at rates that are faster than today's RF rates, with much less mass and power. It is great that NASA is looking at commercial capabilities for future space data relay needs, and we are excited at the prospects for both Earth Orbiting and Deep Space missions. "—**Al Tadros**, Vice President of DoD and Civil Business, **SSL**



"I am most excited about the capabilities available today and, more importantly, in the near future, for hosted payloads with the new high throughput satellites (HTS) coming on-line. The innovative, efficient, and flexible designs being implemented in multi-spot, high frequency re-use satellites bring unprecedented throughputs to end-users. Designs being worked on and proposed provide even more flexibility, performance and resiliency. Hosted payloads can, and should, leverage the improved communication capabilities resident on their host satellites."—**Mark Daniels**, Vice President, Engineering and Operations, **Intelsat General Corporation**



"As government agencies continue to struggle with tight budgets, there are emerging technologies being advanced by commercial entities that are gaining the attention of scientists, investors, and Congressional members. The 2014 Congress considered a bill to advance space-based commercial weather data opportunities. Unfortunately the Senate didn't consider the bill in 2014 but we look forward to the 2015 Congress re-engaging in this great opportunity. Advanced weather collection capabilities have been hampered for years as current Programs of Record ran over budget and behind schedule. The proven and rapidly advancing technologies available through commercial investments will take root over the next few years, the only question that remains is: Will the U.S. be the leader or wait to be a follower."—**Tim Deaver**, Vice President, Corporate Development, **SES Government Solutions**





## HPA CORNER: RECONFIGURABLE PAYLOADS

By Robert B. Clark, Hosted Payload Manager, Harris Corporation

**T**he concept of reconfigurable space-based capabilities is gaining traction in our industry, as evidenced by the lively Satellite 2015 panel. Increasing the application of this approach will change the way we design, build, deploy, and use our platforms.

On March 16, 2015, Satellite 2015 attendees were treated to several perspectives on the industry push to make our space-based assets more flexible, and, therefore, more useful. Nate Conn, President of OMNI Space Access and OMNI Consulting Services, moderated a panel entitled *"Software-Defined Hosted Payloads: What are the Benefits of Reconfigurable Architectures?"*

Panelist Hector Fenech discussed Eutelsat's software-defined Quantum satellite that will electronically synthesize receive and transmit functions in the Ku-band, including on-board jamming detection and mitigation. The satellite development was announced by the company in December of 2014. The first satellite, to be launched in 2018, will be primed and manufactured by Airbus Defense and Space (ADS) in the UK using its innovative flexible payload technology and a new platform from its affiliate, Surrey Satellite Technology Ltd. (SSTL). Both developments are supported by the UK Space Agency.

The Quantum satellite enables a new flexibility in fleet management, providing the ability to define the satellite functions as needed to replace a failed satellite or to extend the capability for an overloaded satellite in the face of changing demand.

Panelist Alan Mast discussed how the Harris AppSTAR™ software defined payload has been adapted to missions including a Ka-band radio, a Synthetic Aperture RADAR, an air traffic surveillance receiver, and multiple additional user-defined missions. The AppSTAR™ platform is flying on the International Space Station today and has manifested more than 200 hosted mission units delivered and/or in production.



Panelist Ahmed Ali Al Shamsi discussed the Thuraya vision of a software defined payload as a design that evolves with technology while in orbit—a unifying theme for the panelists. Key aspects of the Thuraya vision include flexible beam forming, gain management, air interface definition adaptation, and dynamic resource allocation. Thuraya will be able to keep pace with changes in air standards and interface demand,



ensuring its space investment remains relevant.

Panelist Damon VanBuren discussed the cost, schedule and risk advantages of SEAKR Engineering's Application Independent Processor (AIP) reprogrammable payload, which is the basis for Iridium NEXT's Onboard Processor, the IP Router in Space (IRIS), TacSat-3 and others.



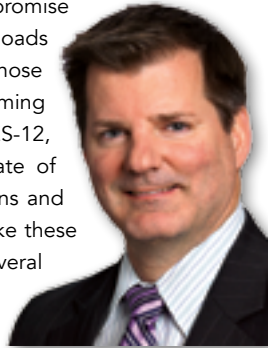
SEAKR's experience has shown that the benefits of reconfiguration begins on the ground in accommodating requirements changes during development, and ultimately extending to on-orbit flexibility.

[The feature graphic on the opening page of this column is courtesy of Harris Corporation.]

This column's question for HPA Members is...

**From your perspective, as members of the Hosted Payload Alliance, how are reconfigurable payloads changing the way you do business now and over the next five years?**

"The challenge is to find the ideal compromise between advanced reconfigurable payloads that provide flexibility and the costs of those payloads. In the latest SES satellites coming into the market place starting with SES-12, we have invested in advancing the state of the art in high throughput design options and the associated hardware required to make these features available to the market place. Several of our new satellites will include digital signal processors, commonly referred to digital transparent processor (DTP) or channelizers.



"The advent of reconfigurable payloads, or "software defined payloads", will mean the ability for an operator to adapt to changing business needs which may be different from when the satellite was first designed. DTP's along with Active Phased Array antennas (APAs) give the operator the flexibility to reshape coverage areas and performance to suit changing customer requirements in near-real-time instead of having to wait for a new satellite to be launched."

—**Tim Deaver**, Corporate Vice President, Development **SES Government Solutions**

"Reconfigurable payloads are incredibly important to Aireon's overall strategy and mission-critical decisions. Over the next five years, we need to make sure that we have the flexibility to tactically meet the growing demand of air traffic. By tracking ADS-B equipped aircraft from space using the AireonSM payload hosted on the Iridium NEXT constellation, consisting of 66 low-orbit satellites, Aireon will be able to provide 100 percent global surveillance to ANSPs, airlines, regulators and airports. The ability to reconfigure the Aireon payloads allows new features and capabilities to be uploaded at any time. This ensures that Aireon will be able to deliver a global capability and meet the needs of aviation now, in five years and beyond as the aviation industry growth matures into new standards and services."



—**Dennis Diekelman**, Development Program Manager, **Aireon**

"Reconfigurable payloads allow operators to adjust their on-board capability over the life of a mission to meet ever-changing operating environments. Examples include the ability to reconfigure coverage areas, transmit power, and connectivity to better serve the users. The Boeing-built Wideband Global SATCOM (WGS) spacecraft provides such capabilities through the use of phased array antennas allowing shapeable coverage, steerable spot beams, and a digital channelizer that can connect any receive-antenna beam to any transmit-beam. This flexibility allows service to be quickly and easily moved globally as demand shifts, and connect users with terminals operating at different frequencies to communicate seamlessly with one another. Reconfigurability is thus instrumental in preserving the utility and value of the payload over the satellite's 10 – 15 year lifespan, despite changing conditions. Boeing sees more compact versions of these reconfigurable payloads as prime candidates for hosting on commercial spacecraft.



"Reconfigurability also can reduce risk. One of the barriers preventing the wider adoption of hosted payloads is the inability of government customers to make financial and mission commitments prior to the start of satellite construction. This forces operators to take on significant financial risk in the event that the government customer's mission needs change over time. Reconfigurable payloads, by their nature, provide greater flexibility in terms of meeting changing mission needs, which in turn lowers the satellite operator's risk profile."

—**Jim Mitchell**, Vice President, **Boeing Commercial Satellite Services**

"Hosted payloads have significantly changed the space business in a positive way; creating a new market that provides affordable access to space for small companies, start-ups and larger organizations, while helping satellite providers close their business plans for launch. As a result, satellite developers, such as Iridium, now plan for excess capacity and resources to support their hosted payload customers' missions; like Aireon, which relies on Harris' AppSTAR™ software defined payload on Iridium NEXT.



"In the future, hosted payloads will move from being a dedicated purchased solution to more of a lease model, where customers pay for only the satellite resources and time they need to meet their business needs. This dynamic use case will force hosted payloads to be much more flexible and reconfigurable and able to support a broad range of missions in space. The push for reconfigurability will ultimately bring even more value, business innovation and new services to space customers."

—**Dr. Frank Bourne**, Director of Research and Development, **Harris Government Communications Systems**

"Future satellites should be flexible and reconfigurable in orbit to meet customer requirements for 1) a competitive cost per bit; 2) a service tailored to their needs; and 3) a service that can be rapidly implemented. This flexibility could include:

- *Frequency selection/change in orbit*
- *Adjustment in uplink and downlink power allocation over a given area on Earth in orbit*
- *A change in allocated bandwidth over a given coverage area in-orbit*
- *In-orbit connectivity between coverage areas with a digital payload*
- *Modification of the coverage area once the satellite is in-orbit with such tools as on board beam forming or active array antennas.*



If you carry these ideas to their full potential, you obtain what we call a "software defined" satellite, i.e. a satellite that is basically identical on the ground and can be configured to the customer's needs once in-orbit. It is plausible to think of a concept where the satellite manufacturer would "pre-build" these standard satellites ahead of the demand. At the request of a customer, they could be launched in record time and configured to meet the mission demand once in-orbit. This will lower the recurring cost of the satellites and reduce the time to market."

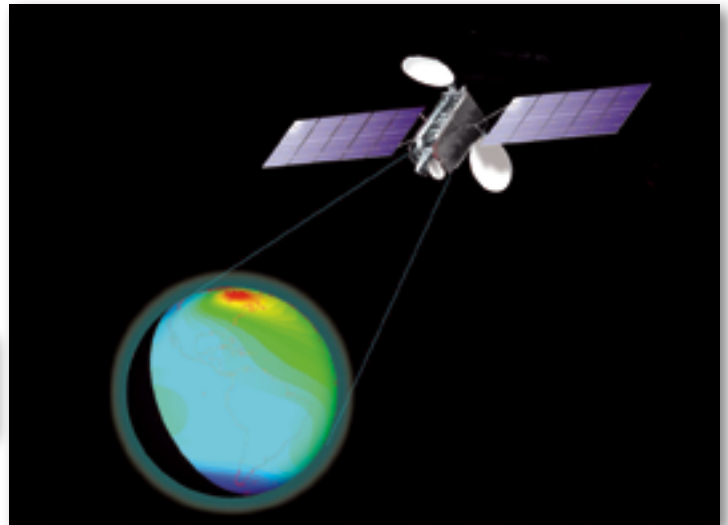
—**Jean-Luc Froeliger**, Vice President, Satellite Operations and Engineering, **Intelsat**

#### **A message from HPA Chair Nicole Robinson**

"As we move into the second half of 2015, we have much we can be proud of as an Alliance in the development of commercially hosted government payloads. Earlier this year, we saw encouraging language in the National Defense Authorization Act supporting this means of accessing space, witnessed the clear advocacy of hosted payloads by Congressman Jim Bridenstine of Oklahoma in a number of external engagements, and revealed the signing of two new hosted payload deals with the NASA GOLD mission as well as the WAAS payload with the FAA. It is clear the hosted payload community is alive and well and the Alliance is playing a significant role in these developments.



"In recent weeks, the HPA engaged our member companies in a survey as well as a series of interviews to understand areas where we truly have excelled in recent years and areas where perhaps we could focus more attention. Through that exploration, we recognized the value in the Alliance's ability to shape and influence such works as the Space Transportation Policy, the CIO Guidance on military spectrum payloads on board commercial satellites, as well as the continued reference to hosted payloads throughout various legislative initiatives. Going forward, we will commit to focusing much of



*Artistic rendition of NASA's Global-scale Observations of the Limb and Disk (GOLD) mission will examine the response of the upper atmosphere to forcing from the Sun, the magnetosphere and the lower atmosphere. Image is courtesy of NASA.*

our attention as an Alliance to continuing senior-level engagements across the government to leverage this momentum and continue to educate on the limitless potential and value industry can provide in this regard.

"Specifically, the HPA is actively engaged in the development of messaging and a call plan related to the ongoing Analysis of Alternatives (AoA) for various space-based capabilities in the Department of Defense. In the weeks ahead, we will be engaging offices involved in the development and review of the SBIRS AoA, Protected AoA as well as the Wideband AoA to ensure the commercially hosted government payload voice and value proposition has been considered.

"The first half of 2015 has proven strong in the area of hosted payloads, however it is clear there is much work yet to be done. I'm confident that with the highly influential and technically astute participants within our Alliance, we will be successful in our effort to engage in the AoA process and more broadly, ensure the hosted payload message is heard, understood and leveraged in the growth of commercially provided government space capability in the future."

#### **About the Hosted Payload Alliance ([www.hostedpayloadalliance.org/](http://www.hostedpayloadalliance.org/))**

Established in 2011, The Hosted Payload Alliance (HPA) is a satellite industry alliance whose purpose is to increase awareness of the benefits of hosted government payloads on commercial satellites. The HPA seeks to bring together government and industry in an open dialogue to identify and promote the benefits of hosted payloads. The HPA:



- *Serves as a bridge between government and private industry to foster open communication between potential users and providers of hosted payload capabilities*
- *Builds awareness of the benefits to be realized from hosted payloads on commercial satellites*
- *Provides a forum for discussions, ranging from policy to specific missions, related to acquisition and operation of hosted payloads*
- *Acts as a source of subject-matter expertise to educate stakeholders in industry and government.*



## DISPATCHES

### A TRIO OF NEW SERVICE LEVELS FOR WARFIGHTERS

### REAL TIME ISR COMMS DEBUT



**A new portfolio of scalable welfare SATCOM services for UK military personnel has been introduced by Airbus Defence and Space.**

The focus of the new Wel2Go portfolio is to provide reliable, value for money and is easy to transport, deploy and operate private communication channels in the field.

The new mobile connectivity suite is part of the WelComE (Welfare Communications Everywhere) services provided to the UK Ministry of Defence (MoD).

The Wel2Go portfolio features three core services for various levels of deployments that will succeed in satisfying the future requirements of the UK MoD.

The Wel2Go Small solution is carried in a single lightweight backpack and features a small deployable node for reliable private VoIP, satellite and data network.

The system can be deployed and configured in less than five minutes and is an ideal solution for deployments of up to 60 people that require quick, flexible communications.

The Wel2Go Medium solution is a quick deploy VSAT (Very Small Aperture Terminal) system transported in aircraft hold approved cases.



Comparatively compact and lightweight, the system provides significant throughput for up to 300 users and is simple to setup and operate. It is perfectly suited for providing private VoIP and wireless connectivity for personal communication in temporary camps and can be moved easily to the next base of operations.

The third solution, Wel2Go Large is a full fixed VSAT connectivity for semi-permanent and permanent bases of operation. It provides high levels of bandwidth and network functionality meeting the requirement for personal communication for almost 1000 people via Internet Café facilities and Wi-Fi.

The Wel2Go Large solution is transported as a complete system in shipping containers, making it straightforward to deploy a camp-wide network almost anywhere in the world.

"Scalability is key to the WelComE concept," said Steve Kelly, WelComE Service Manager, Airbus Defence and Space. "Welfare communication is vital for military operations and humanitarian missions, but it's impossible to have a one-size-fits-all system. We have designed WelComE to provision voice and data connectivity for any requirements, supporting the welfare of troops and other personnel working away from home by offering a reliable connection with family and friends wherever they are based."

[www.satcom-airbusds.com/](http://www.satcom-airbusds.com/)

**Global satellite bandwidth provider SES Government Solutions unveiled a comprehensive Netcentric communications solution for field-deployed units during a demonstration for U.S. Government customers last month.**

By combining O3b's satellite broadband connectivity and RIVA Network's field deployable 4G nanoLTE solution, the SES solution delivers real-time HD video feeds and imagery files stored in the Cloud to individual members of remote field teams. The same link also allows those deployed teams to collect and send raw sensor and video data back to off-site data analysis and command centers.

During the demonstration, U.S. Government customers were able to use mobile phones and tablets outside of WiFi range and transport real-time video through the LTE bubble and stream the footage without delay over O3b satellites back to a cloud server located in Ashburn, Virginia. This setup allows for high bandwidth and broadband IP communications which include standard and HD video, ultra HD video, voice and teleconferencing. This mission-critical technology is compatible with any smartphone and paves the way for an increased use of mobile devices for military operations. In essence each Soldier, Sailor, Airman and Marine can be a sensor providing vital information to deployed units through the O3b system.

The RIVA Network addition to this demonstration provided another key capability to support U.S. Government forces. The sphere of connectivity is scalable with multiple nanoLTE nodes and ranges up to 22 miles, depending on the exact network configuration. All RIVA components for this particular demonstration are easily transportable. The solutions featured in the demonstration are available on SES GS's and RIVA Networks' GSA Schedule. The demonstration was attended by more than 50 U.S. Government guests and is the third consecutive successful demonstration of SES GS applications leveraging O3b's high throughput and low latency capabilities.

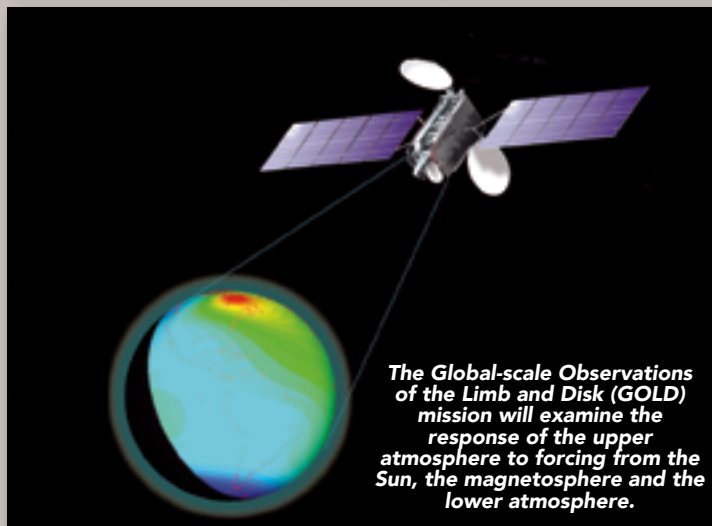
[www.ses-gs.com](http://www.ses-gs.com)

# HPA CORNER: THE HOPS ID/IQ CONTRACT

By Rich Pang, Senior Director, Hosted Payloads, SES Government Solutions

**T**he concept of hosting government payloads on commercial satellites is gaining wider acceptance, as has been demonstrated by the recent announcements of two upcoming hosted payloads on two separate commercial communications satellites.

Those satellites are the Federal Aviation Administration's (FAA) Wide Area Augmentation System (WAAS) payload on SES-15 and the NASA-funded, Global-Scale Observations of the Limb and Disk (GOLD) payload on SES-14.



In July of 2014, the Space and Missile Systems Center (SMC) made a significant decision to begin regularly including hosted payloads as an option in all future mission architectures by awarding 14 companies with ID/IQ contracts to host government payloads on commercial satellites.

However, the first fully funded mission being competed on the contract is not an Air Force payload, but NASA's Tropospheric Emissions: Monitoring of Pollution (TEMPO) mission. Although TEMPO is a fairly large payload with strict orbital location requirements, many government-funded

science missions are finding commercial hosting as a viable and cost-effective method for achieving their objectives.

Competed for and selected in 2013 under NASA's Explorer announcement of opportunity, the primary purpose of the GOLD mission is to modernize the understanding of the space environment by filling the critical gap in knowledge of Sun-Earth connections. The hosting contract for GOLD includes integration, test, launch and two years of on-orbit operations, with options to extend operations on an annual basis.

Although not released through the HoPS contract, the buzz generated by the activities before, during, and after have led to other hosted payload contracts as well. The FAA has contracted to host WAAS payloads on Eutelsat 117 West B (formerly SatMex-9) and SES-15 through its prime contractor, Raytheon Integrated Defense Systems.

The WAAS hosted payloads will serve as air navigation aids to augment the Global Positioning Systems (GPS), with the goal of improving its accuracy, integrity and availability. Both of these contracts include construction, integration, and test of the WAAS payload, launch, and eleven (11) years of on-orbit operations with options to extend on an annual basis.

This column's question for HPA Members is...

**From your perspective as members of the Hosted Payload Alliance, how have SMC and HoPS facilitated the advancement of hosting government payloads on commercial satellites? What more can be done?**

"SMC has taken an important first step by providing a contract vehicle that any U.S. Government entity can use to procure hosting services from a list of pre-qualified providers, overseen by a talented group of space professionals. The HoPS standard contract structure and deliverable set creates an excellent framework to expedite the acquisition and contracting process. It is incumbent upon the mission program offices to include hosted payloads as an alternative in their architecture trades and be prepared to have funding in place to take advantage of the cost, schedule and risk benefits hosted payloads offer, much like NASA is doing with the TEMPO payload.

"The HoPS contract vehicle is an enabler for deploying space assets for pennies on the dollar but its long term success will be measured by the number of actual missions flown. This is a new way of doing business, so a slow start is not unexpected."—**Allen Lindsay**, Vice President, Responsive Solutions, National Business Unit, **Harris Corporation**.







"Standing up the Hosted Payload office and issuing the HoPS IDIQ was an important and forward-thinking step in increasing the visibility of commercially hosted payloads for government missions. In order to more fully utilize the HoPS program and commercially hosted opportunities, I would like to suggest two ideas.

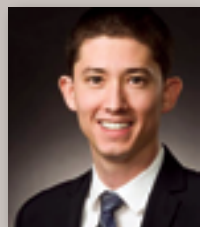


"First, the government needs to include commercial hosts when conducting Analysis of Alternatives (AoA) for future space-based missions. This means engaging commercial owner / operators early and often throughout the AoA studies, and selecting commercial hosts at least as a partial solution to the overall space-based architecture for a space mission. This will enable the government to leverage the benefits commercial space can provide, such as space access and operations at a fraction of the cost of a mission architecture that's designed to use only dedicated satellites, and re-purpose limited O&M dollars for other USG space mission priorities.

"Second, the timelines at which commercial industry drives new satellites and capabilities to space, and the accompanying processes to support these activities, are not necessarily aligned to match government acquisition strategy decision points. Ideally, USG space-based missions that plan to leverage commercial hosts should plan to finalize requirements and have funding to begin six-to-nine months prior to commercial owner/operator contracting for a new satellite build. This may require more flexibility in Congressional funding and acquisition policy as opportunities for commercial space access are driven by a dynamic market.

"Quarterly discussions with commercial satellite owner/operators would be an excellent way for the HPO to understand the commercial space business case process and contracting timelines to leverage commercial opportunities, as more space missions adopt hosted payloads into their architectures. Commercial industry wants to be part of the solution and regular dialogue will help the government anticipate and leverage tremendous opportunities in commercial access to space."—**Eric Moltzau**, Senior Principal Director, **Intelsat General Corporation**.

"The SMC HoPS program has provided a vehicle to help standardize contracting and contractor performance measurement for hosted payload LEO, MEO and GEO programs. It is the most comprehensive effort to date to establish this type of standardization.



As the Government and Industry move on the learning curve, more will be done to define requirements early and minimize design impacts to the commercial spacecraft."—**Chris Jewell**, Business Development Manager, **Lockheed Martin**.

"The HoPS office has successfully brought a number of hosted payload opportunities to industry's attention, maximizing their chances for successful hosting. Additionally, the existence of the HoPS contract has established credibility to the Government's commitment to hosted payloads, incentivizing investment on the part of industry partners—both service providers and manufacturers alike—to make hosted payloads part of our product line approach.



"Although some great work has been achieved though HoPS study tasks, contracts for host rides have been slow to materialize, particularly with military users. An influx of studies are being done for government program offices on alternative solutions, but none as of yet have resulted in a clear path forward on mission architectures. This is slowing the uptake on HoPS because these payloads have yet to be defined.

"Plus, there are actually excellent payload candidate payloads available for hosting, but currently no channel exists for industry to suggest these concepts and designs.

"HoPS should be expanded to include contractor-furnished payloads, where industry can propose the build of both the payload and the host ride. This would get the Government closer to the one-bellybutton approach it desires by adopting commercial practices. It also would transition Government architectures more quickly to the diversity and resilience that is needed in this current budget and threat environment."—**Hayley McGuire**, Deputy Director, **Boeing Advanced Government Space Systems**.

#### The Benefits Of Hosted Payloads

A hosted payload is a portion of a satellite, such as a sensor, instrument or a set of communications transponders that are owned by an organization or agency other than the primary satellite operator. The hosted portion of the satellite operates independently of the main spacecraft, but shares the satellite's power supply, transponders, and in some cases, ground systems. The concept of a hosted payload was developed in order to enable government organizations to make use of commercial satellite platforms in order to save costs and create a more distributed architecture for space assets.

#### About the HPA

Established in 2011, The Hosted Payload Alliance (HPA) is a satellite industry alliance whose purpose is to increase awareness of the benefits of hosted government payloads on commercial satellites. The HPA seeks to bring together government and industry in an open dialogue to identify and promote the benefits of hosted payloads. The HPA:

- » Serves as a bridge between government and private industry to foster open communication between potential users and providers of hosted payload capabilities
- » Builds awareness of the benefits to be realized from hosted payloads on commercial satellites
- » Provides a forum for discussions, ranging from policy to specific missions, related to acquisition and operation of hosted payloads
- » Acts as a source of subject-matter expertise to educate stakeholders in industry and government.